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Phonatory Function Parameters in Females with Prolonged Usage of Inhaled Corticosteroids for Asthma: An Exploratory Laryngeal Aerodynamic Study

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ABSTRACT

The present study aimed to document the aerodynamic parameters in adult females with prolonged usage of inhaled corticosteroids. Bronchial asthma, labored breathing and wheezing, and allergies can also cause sore throat and inflammation around the vocal cords. So the voice sound becomes hoarse or scratchy when swollen, inflamed cords don’t vibrate efficiently. Aerodynamic analysis assesses the interaction of both respiratory and laryngeal function. Twenty female participants within the age range of eighteen to twenty five years were included in this study. They were divided into two groups. The control group constituted of ten participants (Mean age- 21.4 years, SD-2.073; Mean height-158.49 cm, SD-4.61; Mean weight- 59.46 kg, SD- 2.43) with no history of asthma. The second group (experimental group) had ten female participants with asthma. Voice Function Analyzer, Aerophone II was used in this study for assessing the laryngeal aerodynamic parameters. The study documented reduced vital capacity (p =0.0013) at 5% level of significance which is manifested as short utterances and reduced loudness in these speakers. The change of aerodynamic characteristics can be due to the effect of remodeling of airway wall associated with steroidal usage. Hence inclusion of voice function analyzer Aerophote II a non invasive aerodynamic measurement in phonatory studies, may be substantial in diagnosing this disorder and to monitor the steroidal dosage during course of treatment.

Keywords: Asthma, Dysphonia, Bronchoscopy, Vital capacity

INTRODUCTION

Asthma is a chronic inflammatory disorder of the airways associated with increased airway hyper-responsiveness, recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, particularly at night/early morning. Middle airway obstruction at the level of the vocal cords may convert mild asthma to severe disease if causing obstruction in addition to asthma itself. Asthma is the most common non-communicable disease among children. The global asthma report in 2014, there are more than 334 million people who are currently suffering from asthma. Asthma is one of the major public health problems worldwide. It can hurt the sound quality of the voice. The medical treatment often includes inhaled steroids with known pathological changes in voice. The frequent use of corticosteroid inhalers (CSIs) has been accompanied by affect on systemic and local adverse reaction (Tanaffos, 2016). Clinical studies have reported the incidence of dysphonia with inhaled steroids to be as high as 55%. Phonatory function studies (PhFS) support subjective and objective dynamics of normal and pathologic phonatory processes. Aerodynamic analysis is interpreted as indicator of laryngeal activity. Aerodynamic analysis assesses the interaction of both respiratory and laryngeal function (Grillo, Perta, and Smith, 2009) and provides information related to the valving efficiency of the glottis during phonation. It provides...
measurement of air volume, flow and pressure and overall respiratory function. Bronchoscopy can be associated with serious complications, of which bronchial obstruction is of particular relevance to asthma. Bronchoalveolar lavage has also been performed to evaluate the effects of asthma therapies (corticosteroids, theophylline, beta-agonists, cromolyn sodium, nedocromil sodium, cetirizine, leukotriene inhibitors, etc.) on parameters of airway inflammation.

Need:
The impact of prolonged usage of inhaled steroids and resultant change in Phonatory dynamics was of interest to the authors. Further the enigmatic change in pattern of prevalence of asthma being more in female adults influenced us to document the aerodynamic parameters in adult females.

Aims and Objective:
The study is aimed to document the aerodynamic parameters in adult females with prolonged usage of inhaled corticosteroids. Further the study also proposes to document the changes in lung function in the participants, if any.

METHODOLOGY

Subjects
Twenty female participants within the age range of eighteen to twenty five years (Mean age- 21.2 years, SD- 2.34; Mean height-157.49 cm, SD-4.94; Mean weight- 57.9 kg, SD- 5.36) were included in this study. They were divided into two groups. The control group constituted of ten participants (Mean age- 21.4 years, SD-2.073; Mean height-158.49 cm, SD-4.61; Mean weight- 59.46 kg, SD- 2.43) with no history of asthma. The second group (experimental group) had ten participants (Mean age- 21 years, SD- 2.82; Mean height- 156.5 cm, SD- 5.59; Mean weight-56.48 kg, SD- 7.29) with asthma.

Inclusion criteria
The study included females with asthma, diagnosed by pulmonologist to have mild-moderate severity. They have been under corticosteroid treatment for over 5 years. The participants who had no history of smoking, GERD, recent environmental changes were included in this study.

Exclusion criteria
Females who were menstruating during the data collection were excluded. The participants who had BMI <25, hypertension, diabetes and other endocrinal and systemic diseases were excluded from the study.

Equipment used
i. Voice Function Analyzer, Aerophone II (F.J. Electronics, Ellebuen 21, DK- 2950 Vedbaek, Denmark) was used in this study for assessing the laryngeal aerodynamic parameters. It takes the advantage of a sophisticated combination of a hardware transducer system with transducers recording airflow, air pressure, and acoustic signal and a computerized data processing. All electronics including the microprocessor and the transducers are miniaturized and built into a small box mounted in the holder for handle and mask.

Calibration of Equipment - Calibration of the equipment was done as per Aerophone II manual (2005).

a) Calibration of air pressure: a calibration factor for the air pressure is not necessary as it is fairly stable and not influenced by patients’ responses. The air pressure transducer is adjusted from the factory and does not need any further adjustment.

b) For calibrated SPL recordings from aerophone, the microphone is factory tested (by means of Bruel & Kjaer, Integrating Precision Sound Level Meter, type 2230) and the appurtenant calibration factor is 0.72. If no calibration factor is typed when the programme asks for a calibration factor to ensure the SPL values are exact (within ±0.2 dBSPL), a default calibration factor is used which is an average of several microphone calibration factors as measured by F-J
Electronics. To ensure that the microphone measures correctly, the microphone was pushed so far through the PVC rubber sleeve that all the side holes are free.

Microphone positions for range, 30–80 dB in flow head, 50–100 dB in flow head, 70–120 dB in flow head.

Table 1: Relation between viscosities of air to the temperature (Aerophone II manual, 2005)

<table>
<thead>
<tr>
<th>Temperature in °C</th>
<th>Viscosity in Cp</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>170.9</td>
</tr>
<tr>
<td>10</td>
<td>175.9</td>
</tr>
<tr>
<td>20</td>
<td>180.8</td>
</tr>
<tr>
<td>30</td>
<td>185.6</td>
</tr>
<tr>
<td>40</td>
<td>190.4</td>
</tr>
</tbody>
</table>

c) Calibration of airflow: 1 liter calibration syringe (accuracy ±0.5%, calibrated at 20°C) was taken. While calibrating the approximately one second airflow for big flow head and approximately four seconds for the small flow head was taken. The piston of the syringe was pressed with a constant and a stable movement during the calibration. The calibration was started with a coarse calibration making 3-5 measurements with the 1 liter syringe. When the result was within 1-2% from the correct value, a new calibration with several successive recordings was done. The programme calculated the average calibration factor of the recordings made, which is stored in the setup file. The same procedure was repeated for both flow heads.

d) Warm-up time: the airflow and pressure transducers need approximately 15 minutes in order to obtain a stable zero line after the system has been turned on. After that time the auto zeroing circuit is able to keep the zero line stable during normal recording sessions, which normally do not exceed 60 seconds. When not recording, the system is constantly auto zeroing.

e) Room temperature: the room temperature was kept at 29°C. It was recommended to keep the room temperature between 10°C and 40°C.

f) Viscosity of air: when the expired air passes the gauze in the flow head, it has a temperature of 35°C as the air is cooled 2°C below body temperature when passing the speech organs and the flow head tubes. The software takes the changed viscosity of the expired air into account. Table 1 relates the viscosity of air to the temperature.

iii Spirometer was also used to measure the lung function.

**Procedure:**

For the medical clearance and candidacy plain chest X-ray P-A view was used to rule out any COPD/lungs fibrosis. ENT examination and videolaryngostroboscopy was done to assess larynx and any vocal fold pathology, signs of reflux, and Paradoxical vocal Movement differentially diagnosing it from asthma. Diagnostic procedures included the case history and GRBAS was used to grade voice by three speech language pathologists with more than 10 years of experience. Additional instrumental procedures included acoustic analysis of the participant’s voice; fundamental frequency (average F0), jitter%, shimmer%, N/H ratio were noted. Two of the subjects agreed for Bronchoscopy while others refused it on financial ground.

To analyze the laryngeal aerodynamic parameters; vital capacity, peak airflow, maximum sustained phonation, fast abduction-adduction rate were taken. During data collection, the procedure was first demonstrated to the subjects until they were familiar with it. Following procedures were used to measure the following parameters:

**1) Vital Capacity:**

1. The following setting was made in the programme as per the instruction given in the manual which were kept constant for all subjects. Flow head
F1000LS was used for the registration with pressure setting of flow range 0-10 l/sec.

2. The subject was asked to inhale as deep as possible and then to exhale all the airs through the mouth tube until the lungs are completely empty. The registration was made in standing position. It was told to take care that the lips close airtight round the disposable mouth tube. The nose clamp was used during the registration. The instructions were repeated whenever needed and demonstrations were made.

3. The subject exhaled into the mouth tube and the data was stored in the computer. Each subject was asked to give three trials and the highest was considered as the vital capacity for that subject. Thus, the vital capacity and its duration were calculated.

(2) Peak air flow:
1. The following setting was made in the programme as per the instruction given in the manual which were kept constant for all subjects. Flow head F1000LS was used for the registration with pressure setting of flow range 0–10 l/sec.

2. The subject was asked to inhale as deep as possible and then to exhale all the air through the mouth tube as fast and as strong as possible.

3. The registration was made in standing position. It was told to take care that the lips close airtight round the disposable mouth tube. The nose clamp was used during the registration. The instructions were repeated whenever needed and demonstrations were made.

4. The subject exhaled into the mouth tube and the data was stored in the computer. Each subject was asked to give three trials and the highest value was considered for that subject. Thus the peak flow, forced volume 1 second and Duration was calculated from the result.

(3) Maximum Sustained Phonation:
1. The following setting was made in the programme as per the instruction given in the manual which were kept constant for all subjects. Flow head F 300LS was used with pressure setting of 5.0 l/s and 50-100dB was selected from the SPL menu.

2. The subject was asked to fix the mask covering mouth and nose over the face and was asked to take care that there was no leakage through the mask during the measurement.

3. The subjects were instructed to take a deep breath and try to produce a matching tone produced by the computer, maintaining its loudness. They could use the indicator (computer monitor) to maintain the loudness. The subjects were asked to say /a/ as long as and as comfortable as possible.

4. The instructions were repeated whenever needed and demonstrations were made.

5. After the phonation, the data were stored in the computer.

(4) Fast Abduction-Adduction rate:
1. The following setting was made in the programme as per the instruction given in the manual which were kept constant for all subjects. Flow head F300LS was used with pressure setting of 1.00 l/s and intensity range was 30–80 dB was selected from the SPL menu.

2. The subject was asked to fix the mask covering mouth and nose over the face and was asked to take care that there was no leakage through the mask during the measurement.

3. The subjects were instructed to say “ah ah ah ah” as fast as possible after taking in deep breath. The voiced production was recorded.

4. The instructions were repeated whenever needed and demonstrations were made.

5. After the recording, the data were stored in the computer.
Three trials were done for each case for the above mentioned parameters to attain test retest reliability.

**Data Processing and Statistical Analysis:**
Statistical analysis such as mean, standard deviation and independent t-test was done for the collected data.

**RESULTS**

The aerodynamic score for Vital capacity in control group shows the mean value of 2.88 litre /second, (SD= 0.071 litre/second) and asthma group shows the mean value of 1.61 litre /second, (SD= 0.353 litre/second) the independent t test result showed there is significant difference in the vital capacity (p =0.0013) at 5% level of significance.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Mean (litre/sec)</th>
<th>Standard deviation (litre/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td>2.88</td>
<td>0.071</td>
</tr>
<tr>
<td>Asthma group (experimental group)</td>
<td>1.61</td>
<td>0.353</td>
</tr>
</tbody>
</table>

The aerodynamic score for peak air flow in control group shows the mean value of 2.77 litre /second, (SD= 0.477 litre/second) and asthma group shows the mean value of 2.34 litre /second, (SD= 0.243 litre/second) the independent t test result showed there is no significant difference in the peak flow (p =0.123) at 5% level of significance.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Mean (litre/sec)</th>
<th>Standard deviation (litre/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td>2.77</td>
<td>0.477</td>
</tr>
<tr>
<td>Asthma group (experimental group)</td>
<td>2.34</td>
<td>0.243</td>
</tr>
</tbody>
</table>

The aerodynamic score for maximum sustained phonation in control group shows the mean value of 16.35 second, (SD= 0.971 second) and asthma group shows the mean value of 15.62 second, (SD= 1.71 second) the independent t test result showed there is no significant difference in the peak flow (p =0.441) at 5% level of significance.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Mean (Seconds)</th>
<th>Standard deviation (Seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td>16.35</td>
<td>0.971</td>
</tr>
<tr>
<td>Asthma group (experimental group)</td>
<td>15.62</td>
<td>1.71</td>
</tr>
</tbody>
</table>

**DISCUSSIONS**

The present study aimed to document the aerodynamic parameters of individuals with prolonged usage of steroid inhalers in asthma. The study documented reduced vital capacity which is manifested as short utterances and reduced loudness in these speakers. The change of aerodynamic characteristics can be due to the effect of remodeling of airway wall associated with steroidal usage. Often faulty usage techniques might also contribute for the same, which hinders the steroid to properly be inhaled and pockets at oropharyngeal level. Since vital capacity is an important indicator of lung function, hence it might be beneficial to use aerodynamic parameters in monitoring dosage and usage technique of steroids in asthma. Although all other parameters where not significant in this study but the increased prevalence of dysphonia might indicate the need to differentiate supraglottal, glottal and subglottal involvement in asthma.
SUMMARY AND CONCLUSIONS

This study has explored an interesting finding, being reduced vital capacity in subjects with prolonged usage of CSI’s in asthma. Further this study needs to be validated by comparing these parameters in control group and subjects with asthma under steroidal usage and without it. Inclusion of voice function analyzer Aerophone II, in phonatory studies in asthma, may be substantial in diagnosing this disorder and to monitor the steroidal dosage which might be a boon in respiratory medicine.

REFERENCES


******
School Health Screening Program at Khubi Village of Western Maharashtra: A Comparative Study

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²Co-ordinator, National Service Scheme, Krishna Institute of Medical Sciences “Deemed to Be” University, Karad, Maharashtra (India)-415539

Corresponding Author: Mr. Dhirajkumar Mane

ABSTRACT

Background: The goal of this program is to investigate the health and wellness attitudes and novelty of students. Now a day’s health is major aspect for student to overcome illiteracy about illness and injury among adolescents. This study promoting healthy behaviors at early age it protects from health risks in adulthood for countries future.

Methods: This is comparative study between primary and secondary school students. Here self administered questionnaire & health cards were used to collect data.

Statistical Analysis: For modeling data SPSS (20.0) software, IBM, INDIA was used.

Results: The mean health knowledge Zillah parishad school students was 6.4±2.2 and high school students was 7.5±1.6 found statistically significant with p<0.05. Also personal hygiene, hygiene practices of high school students was quite good while compare it with Zillah parishad school.

Conclusion: Surrounding of high school students was better in respect of Zillah parishad students. A more strategies requires from Zillah parishad organization to bring sustainable changes from tomorrow future.

Keywords: Health status, school health screening, hygiene, BMI.

INTRODUCTION

Schools are in-comparable vantage to promote health of school children. [1-3] School going children’s represent one-fourth of the total population and are the future of the country. School health is effective engagements that can helps to improve the quality of education and lifestyle. It has a potential to help students achieve health literacy, enhance their health-related behaviors, and thereby improve their health status. [4-7] Schools with poor water, sanitation and hygiene conditions, and intense levels of person-to-person contact, are high-risk environments for children and staff, and exacerbate children’s particular susceptibility to environmental health hazards. Children’s ability to learn may be affected by shortage of water, sanitation and hygiene conditions in several ways. It has been focusing on school health policies, life skills-based health education, health services, and a supportive school environment for health promotion. [8,9] School, a convergence center for health and education, is a setting that plays an important role in physical, social, mental and emotional development of children. School health program is an important component of health care facility in the country with starter to purpose of addressing the health needs of children, both physical and mental and in addition, provide for nutritional interventions, yoga facilities and counseling. [10] This program promotes screening of school children for various health problems and raises awareness about health issues in children and their families. [11,12] The important services include general health examination, anthropometry, treating minor ailments, referral and health education. School health program also caters to adolescents who represent around 25% of the world’s population and around 59% of developing countries. [3] Morbidity
among school-going children adversely affects their normal growth and development and hence it is a major public health concern. The common ailments seen in this age group are malnutrition, Vitamin A deficiency, \[^{13}\] dental caries, \[^{14-16}\] Malnutrition due to deficiency or excess or imbalance of nutrients can put children at high risk of early development of chronic diseases particularly if combined with other adverse lifestyle behaviors. \[^{8,9}\] Hence, it is vital that these morbidity design and deficiency in nutritional status are detected and controlled to get a healthy and economically productive future generation.

**MATERIALS & METHODS**

**Study Area:** Khubi Village, Maharashtra (India).

**Study Setting:** Observational Comparative Study

**Samples:** Selected by Randomization (Total = 130)

This information was collected during National Service Scheme (NSS) visit at Village Khubi. The results were totally reliable on secondary data. The team comprising of Faculty, Postgraduates, Interns, Medico-Social Workers and Psychologists visited schools for conducting health check-up and imparting health education to the students. The topics for health education constituted locally endemic diseases, reproductive health and personal hygiene. Prior training was provided to volunteers for measuring anthropometry and clinical exam. The health card of the students issued by the department of education was taken as a standard proforma. Age of children was ascertained by school catalogue. Anthropometry readings such as height and weight were measured; body mass index (BMI) was calculated which was followed by detailed general and systemic examination. Information was synthesized after student interactions under observation of Principal. All self administered questions was asked one by one personally. The study questions were multiply into two parts.

1. Sanitary & Hygienic Situation (awareness, monitoring etc.)
2. Major/Minor Health Issues (Any non communicable diseases/BMI etc.)

**Measurements and examination details**

**Weight**

Weight was recorded using electronic machine, zero was its calibration before start, school students were asked to step on it and stand still for equal distribution of weight. 100 g. was targeted closer value for consideration. \[^{17}\]

**Height**

Height was taken using the wall mounted stadiometer. It was taken after removing the footwear, subject standing erect with feet parallel; heel, shoulders and occipital touching the upright rod, position of head being comfortably erect with the lower border of orbit of the eye in the basement and it was ensured that it should closer to 1 cm. \[^{17}\]

**BMI**

The BMI was calculated as the weight (in kilograms) divided by the square of their height (in meters). World Health Organization BMI for age tabular configuration was considered to classify a child as normal, underweight and overweight. \[^{18}\]

General examination included overall general appearance etc. observationally calculated.

**Statistical Analysis:**

Results was done by using SPSS (Statistical Packages for Social Sciences 20.0), IBM. “Unpaired t-test” was used for comparison between two independent groups. “Chi-square” was assessing to find out association between knowledge and practices.

**RESULTS**

A total 130 school students were covered in the field practice during National Service Scheme Camp at Village, Khubi comprising Zillah Parishad School (government body) from 1\(^{\text{st}}\) std. to 7\(^{\text{th}}\) std.
and High School (private body) from 8th & 9th std. (10th std. was not part of this study).

All the school students were divided into the different environment (dif. Geographical area) of schools. Hence 1st group was students from “Zilha Parishad School” and 2nd group was students from “High School” which represent primary, secondary and high school students respectively. The mean age of primary and secondary student was 9.67±1.99 years. Whereas, mean age high school student was 13.90±0.73 years. [Pls. see Table1 & Figure1]

<table>
<thead>
<tr>
<th>School/Gender</th>
<th>Zilha Parishad School</th>
<th>High School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>39(45%)</td>
<td>21(49%)</td>
</tr>
<tr>
<td>Female</td>
<td>48(55%)</td>
<td>22(51%)</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>9.67±1.99</td>
<td>13.9±0.73</td>
</tr>
</tbody>
</table>

Table 1: Distribution of School Student.

Table 2: Distribution of Health Knowledge among School Student.

<table>
<thead>
<tr>
<th>Health Knowledge</th>
<th>Zilha Parishad School N=87</th>
<th>High School N=43</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>6.4</td>
<td>7.5</td>
</tr>
<tr>
<td>SD</td>
<td>2.2</td>
<td>1.6</td>
</tr>
<tr>
<td>P-value</td>
<td>P&lt;0.0001</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 revealed that statistical significance in the mean knowledge scores of the students from the group 1 (6.4, SD 2.2) and the comparison group 2 (7.5, SD 1.6). It seems high school student knowledge was significantly better while compare with Zillah parishad school.

Table 3: Distribution of Students as per Grades of Personal Hygiene Status.

<table>
<thead>
<tr>
<th>Grades</th>
<th>Good (%)</th>
<th>Fair (%)</th>
<th>Poor (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zilha Parishad School N=87</td>
<td>38(44%)</td>
<td>30(34%)</td>
<td>19(22%)</td>
</tr>
<tr>
<td>High School N=43</td>
<td>22(51%)</td>
<td>14(33%)</td>
<td>7(16%)</td>
</tr>
<tr>
<td>Total N=130</td>
<td>60(46%)</td>
<td>44(34%)</td>
<td>26(20%)</td>
</tr>
</tbody>
</table>

Chi-square = 0.8258 and p=0.6618

Table 3 revealed that after examination of personal hygiene different grades was examined. Among 130 school students 46% had good personal hygiene, 34% had fair personal hygiene, 26% had poor personal hygiene. The personal hygiene of Zillah Parishad School was poor while compared it with high school students.

Table 4 reported in high school students a slightly higher proportion of hygiene practices such as hand washing before eating (86% vs.64.4%), hand washing after toilet use (93% vs. 78%), using soap while hand washing (63% vs. 34%), brushing teeth at least one times per day (60.1% vs. 54.9%) and brushing teeth two times per day (26% vs. 2%). In this study it seems brushing frequency of both the school was found serious cause of dental caries. Also, the incidence of diarrhea (9% vs. 33%, p = 0.0027) and worming infection (2% vs. 13%, p = 0.1028) was significantly lower among the students in high school. However, most of study variables were found to be statistically significant.

**DISCUSSION**

A total of 130 school students were interviewed for finding health knowledge, BMI, hygiene practices and health outcomes. Here, Majority students were...
present to participate in self hygiene. This study reflected the adverse effect due to unawareness of health risk factors. The frequency of hygiene practices and hygiene knowledge of Zillah Parishad School shows signs of deficiencies. Although investigations indicate that high school student comparatively better among all the study parameters. School health program is, therefore, a vital bridge of departments of Education and Health care providers.

Table 4: Distribution of School Student Hygiene Practices & Health Outcomes.

<table>
<thead>
<tr>
<th>Hygiene Practices</th>
<th>Zilha Parishad School N=87</th>
<th>High School N=43</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the past 30 days, how often did you wash your hands before eating?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>56</td>
<td>37</td>
<td>0.0161*</td>
</tr>
<tr>
<td>Sometimes</td>
<td>31</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>During the past 30 days, how often did you wash your hands after using the toilet or latrines?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>68</td>
<td>40</td>
<td>0.0453*</td>
</tr>
<tr>
<td>Sometimes</td>
<td>19</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>During the past 30 days, how often did you use soap when washing your hands?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>30</td>
<td>27</td>
<td>0.0027*</td>
</tr>
<tr>
<td>Sometimes</td>
<td>57</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>How often do you brush your teeth?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;=One time per day</td>
<td>85</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>=&gt;Two times per day</td>
<td>2</td>
<td>2</td>
<td>&lt;0.0001*</td>
</tr>
<tr>
<td>Health Outcomes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often did you have a toothache because of your teeth?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Always</td>
<td>70</td>
<td>20</td>
<td>0.0002*</td>
</tr>
<tr>
<td>Sometimes</td>
<td>17</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Did you suffer from diarrhea or dysentery within past one month?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>29</td>
<td>33</td>
<td>0.0027*</td>
</tr>
<tr>
<td>No</td>
<td>58</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Did you suffer from worm infection within past one month?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11</td>
<td>13</td>
<td>0.1028</td>
</tr>
<tr>
<td>No</td>
<td>76</td>
<td>87</td>
<td></td>
</tr>
</tbody>
</table>

*Significant When P<0.05

It is a golden chance to implement in schools for better prevention at the same time to a large number of students. A lots studies already been done in majority of geographical area of India to discover the health status of school student and to find the growth chart and built up, including the examination of minor illnesses. [19-21]

CONCLUSION
This type of study will helps to gain health outcomes among the schools in Maharashtra. For superiority of school environment need to carry out best health assessing practices for school betterment, by improving quality of available infrastructure mainly focusing screening program in regular manner. It is necessary for schools to work on health risk factors including the effects of knowledge, attitudes, and practices of school going students. This study helps to reduce the risk of harming students and have in place a safe and supportive environment for students. It is necessity for the District Health Officer and PHCs to pay more attention and make separate policies for school students for interventions mainly in rural area to reduce early stage risk. This study helps various schools for health intervention.

REFERENCES


*****
Influence of Women’s Status in Their Family on Their Health and Nutritional Status- Considering Employment as a Rider

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Corresponding Author: Anees Fathima Thabassum Z

ABSTRACT

Background: Indian societies are principally male dominated, who have greater control over family decisions, and this causes subordination of women and their roles and status in the family and society. This restrains women in decision making in every sphere of life including those related to their health and mental well-being.

Objective: This study aims to explore association between women’s status in the family and its influence on their overall health and nutrition.

Methodology: Educated women, 400 employed (EW) and 272 unemployed women (UEW); aged 25 to 40 years participated. Self-reporting standardized questionnaires were used to elicit information regarding their Degree of involvement in decision making and preference given in family to evaluate their status. Information on General health distress (GHD), Menstrual and Mental health, General health quality (GHQ) were also obtained. Height and weight were measured.

Results: Significantly higher percentage (33%) of EW were involved in complete decision making (P<0.0001) and enjoyed good family status (P=0.036). Majority of women irrespective of employment and family status experienced mild GHD. EW with poor family status experienced significantly higher GHD (P=0.021). Severity of Pre-menstrual symptoms (PMS) significantly increased with decrease in family status (EW and UEW, p=0.0148 and p=0.0050).

Family status also influenced mental health, significant differences were noted among EW (Depression-P=0.0007, Anxiety-P=0.0408, Stress-P<0.0001) and UEW (Depression-P=0.0001, Anxiety P=0.0018, Stress P=0.0308). Among EW family status exhibited significant association with GHQ, GHD, depression, Anxiety and stress. However among UEW significant association of family status with GHD, PMS, depression, Anxiety, and Stress was evident.

Conclusion: It is obvious that employment acts as a catalyst in enhancing women’s status in the family, it can be considered as a prime factor determining their health status; overall wellbeing, unemployment and poor status in the family may have serious effect on the general and mental health of women.

Keywords: Women’s status, Family status, Employment, Decision making, General health distress, Mental health.

INTRODUCTION

Women’s status in family and society has undergone several revolutionary adaptations, yet in the present day - it depends on the position they hold within the society and family. Goldin.C, 2006, (1) opines that development in women’s status envelops 3 major areas i.e. analyzing the horizons, understanding their identity and involvement in decision making. Involvement of woman in family’s decision making is enabled through her education, employment, income, resourcefulness, ownership, and ideological structures. (2,3)

Hence active participation at all levels of decision making within the family has been considered to improve and promote equality, peace and well-being of the family and ultimately the country. (4,5) Status of women in the family has been considered important from various perspectives; studies have often correlated family status of women to their physical and
mental wellbeing. Ultimately the developments of women to their full potentials including economic activities are interconnected.

Employment per se is known to offer opportunities for overall growth. Occupation and employment defines one’s fundamental identity and societal worth by influencing women in particular to revolutionize their status from being static decision makers with limited prospects to effective and dynamic decision makers. Involvement in decision making per se can be considered as a driving force to empower women to become more productive, efficient and gainful in the bargain to establish a strong, healthy and versatile family. It was therefore considered worthwhile to assess “family status of women” in the contemporary society and its associated influence on women’s overall health and wellbeing. Hence this study examines probable influence of family status of women on their health status.

OBJECTIVE
To study and compare the influence of women’s status in their family on the health and nutritional status of educated married women - Employed and Unemployed.

METHODOLOGY

Study population: The proposed study is a population based cross-sectional study carried out in Mysore city. The study population comprised of married educated young adult women (25-40yrs) who were economically active as well as homemakers (formed control group) residing within the urban region of Mysore city; a major city from Karnataka in South India. The proposed study was approved by the Institutional Human Ethical Committee - University of Mysore. Written consent was obtained from the participants.

Study design: The study combines both qualitative and quantitative data-collection methods.

List of tools used to elicit information

Standardized self-reporting questionnaires were used to obtain the following data from the participants.

1. Socio-demographic questionnaire
- Information related to the respondent and her family with respect to age, sex, professional activity, and number of children, residence and other relevant details were obtained through a pre-tested questionnaire.

2. Family status of women. This is a derived factor, it was done based on two components, and they are:
   a. Involvement of women in family decision making and
   b. Freedom to exercise Preference in family matters.

The questionnaire used for this comprised of two Sections

a. Involvement of women in family decision making: this was developed based on questionnaires of Dangol.R (2010) and Sultana A.M (2011). It included 13 close-ended questions relating to Involvement of women in family decision making covering three domains (Income utilization; Freedom of mobility; and Freedom for socializing).

b. Freedom to exercise Preference in family matters: Questionnaire developed by Clem T,(2001) was adopted with slight modification. Respondent were to rank listed activities 1to4 depending on the preference accorded to her by the family to

The activities were categorized under Food distribution, Medical care, and Satisfying her needs.

Family status: Family status was derived based on the total sum of score for the two adopted criteria’s; the final total sum of scores so obtained was 16 – 77. Scores between 16-36 indicative of ‘good status’; 37-57 ‘fair status’ and >58 ‘poor status’.

3. Questionnaire for assessing overall health and Nutritional Status- health assessment was conducted using self-reporting questionnaires. It included three components; General Health problems encountered by the participants was obtained for the presence of morbid
disorders, pain related symptoms and reproductive health issues; presence of premenstrual symptoms and menstrual disorders. This questionnaire was developed for the purpose. Quality of health was assessed using GHQ-28 developed by David Goldberg, (1978); (11) while Stress, anxiety and depression was assessed using DASS questionnaire developed by Lovibond & Lovibond, (1995). (12)

**Anthropometric measurements:** Height, Weight, Mid upper arm circumference, Waist circumference, Hip circumference, Skin fold thickness- Biceps, Triceps, calf were measures from individual participants according to methods described by Jellife D.B, (1966). (13)

**RESEARCH RESULTS**

**- Socio-demographic and familial characteristics of the subjects**

Socio-demographic and familial characteristics of 672 educated married women (400 EW and 272 UEW) is presented in table 1. Higher percentages of women in both the groups were aged between 25-34 years. Majority of women belonged to Hindu religion, 60 percent of employed women and 63% of unemployed women were graduates. The current trend of living in nuclear family is reflected in the study population with 71% EW and 73% UEW having nuclear families.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Characteristics</th>
<th>Employed women (n=400)</th>
<th>Unemployed women (n=272)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (in years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 – 29</td>
<td>148 (37.0)</td>
<td>147 (54.0)</td>
<td></td>
</tr>
<tr>
<td>30 – 34</td>
<td>140 (35.0)</td>
<td>73 (27.0)</td>
<td></td>
</tr>
<tr>
<td>&gt; 35</td>
<td>112 (28.0)</td>
<td>52 (19.0)</td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hindu</td>
<td>225 (56.0)</td>
<td>142 (52.0)</td>
<td></td>
</tr>
<tr>
<td>Muslim</td>
<td>111 (28.0)</td>
<td>91 (34.0)</td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td>64 (16.0)</td>
<td>39 (14.0)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma/PUC</td>
<td>74 (19.0)</td>
<td>67 (25.0)</td>
<td></td>
</tr>
<tr>
<td>Graduates</td>
<td>241 (60.0)</td>
<td>172 (63.0)</td>
<td></td>
</tr>
<tr>
<td>Higher education</td>
<td>72 (18.0)</td>
<td>27 (10.0)</td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>13 (3.0)</td>
<td>6 (2.0)</td>
<td></td>
</tr>
<tr>
<td>Household structure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear</td>
<td>286 (71.0)</td>
<td>198 (73.0)</td>
<td></td>
</tr>
<tr>
<td>Joint</td>
<td>110 (28.0)</td>
<td>63 (23.0)</td>
<td></td>
</tr>
<tr>
<td>Extended</td>
<td>4 (1.0)</td>
<td>11 (4.0)</td>
<td></td>
</tr>
</tbody>
</table>

Job profile of the participants is depicted in fig 1, 32% were teachers, 24% were employed in health care sector and 44% held administrative jobs. It also provides details about the breakups in job position under each of the occupation groups.

**- Status of women in the family and related factors**
Table 2: Level of involvement in decision making—comparison between employed and unemployed women

<table>
<thead>
<tr>
<th>Involvement in decision making</th>
<th>Employed women (n=400)</th>
<th>Unemployed women (n=272)</th>
<th>Chi value / p value / Degrees of freedom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete Decision makers (CDM)</td>
<td>130 (33.0)</td>
<td>45 (17.0)</td>
<td>24.48 / p&lt;0.0001 / 2</td>
</tr>
<tr>
<td>Partial decision makers (PDM)</td>
<td>262 (65.0)</td>
<td>213 (78.0)</td>
<td></td>
</tr>
<tr>
<td>Limited decision makers (LDM)</td>
<td>8 (2.0)</td>
<td>14 (5.0)</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Freedom to exercise preference in family matters accorded to women—comparison between employed and unemployed

<table>
<thead>
<tr>
<th>DOMAINS</th>
<th>EMPLOYED WOMEN n=396</th>
<th>UNEMPLOYED WOMEN n=272</th>
<th>Chi value / p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food distribution</td>
<td>64(16.0)</td>
<td>98(25.0)</td>
<td>9.29* p=0.025</td>
</tr>
<tr>
<td>Medical care</td>
<td>48(12.0)</td>
<td>90(23.0)</td>
<td>12.9** p=0.0048</td>
</tr>
<tr>
<td>Need fulfillment</td>
<td>23(6.0)</td>
<td>80(22.0)</td>
<td>6.42 NS</td>
</tr>
</tbody>
</table>

Family status of women is a vital indicator of women’s development in any society. (5,9) various indicators are considered for its measure, however in the present study ‘involvement in decision making’ and ‘freedom to exercise preferences’ in family matters were used. Comparison about the degree of involvement in decision making between EW and UEW is presented in table 2, it is obvious that majority of women irrespective of their employment status were involved in partial decision making. Nevertheless significantly higher proportion of EW were involved in complete decision making (P<0.0001). It is obvious therefore that employment influenced women prominently in decision making.

Table 4: Family status of women: Comparison between employed and unemployed

<table>
<thead>
<tr>
<th>FAMILY STATUS</th>
<th>EMPLOYED WOMEN (n=400)</th>
<th>UNEMPLOYED WOMEN (n=272)</th>
<th>Chi value / p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>116 (29.0)</td>
<td>56 (21.0)</td>
<td>6.6 p=0.036</td>
</tr>
<tr>
<td>Fair</td>
<td>278 (69.0)</td>
<td>209 (77.0)</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>6 (2.0)</td>
<td>7 (2.0)</td>
<td></td>
</tr>
</tbody>
</table>

Among the other auxiliary activities of women that were used as a parameter for assessing women’s status in the family was the freedom to exercise ‘preference’ in family matters. The order (as ranking) in which the women participants were granted freedom of preference in 3 major domains is presented in table 3. First preference given to employed and unemployed women in all 3 domains were essentially similar with percentages ranging from 6-18, indicating no significant differences between employed and unemployed women for preferences. Majority of women were given second and third preference in all the selected domains.

Table 5: Comparison of family status with level of involvement in decision making of the subjects

<table>
<thead>
<tr>
<th>FAMILY STATUS</th>
<th>INvolvement in decision making</th>
<th>EMPLOYED WOMEN (n=400)</th>
<th>UNEMPLOYED WOMEN (n=272)</th>
<th>Chi value / P value / df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>Complete n=130</td>
<td>Partial n=262</td>
<td>Limited n=8</td>
<td>Complete n=45</td>
</tr>
<tr>
<td></td>
<td>100 (77)</td>
<td>16 (6)</td>
<td>0</td>
<td>38 (84)</td>
</tr>
<tr>
<td>Fair</td>
<td>30 (23)</td>
<td>246 (94)</td>
<td>0</td>
<td>7 (16)</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
<td>8 (100)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chi value / P value / df</td>
<td>613/p&lt;0.0001/df=4,</td>
<td>265.5/p&lt;0.0001/df=4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is apparent from Table 4 that majority of the women held ‘fair statuses in their families irrespective of the employment status. Although employment did not seem to have a notable influence, 29 % EW enjoyed a good family status. The difference did have a mild statistical significance (p=0.036), indicating employment to have a redemptive effect.
It was considered imperative to investigate the influence of family status on degree of involvement in decision making. The intra and inter group comparison among the employed and unemployed women is presented in table 5, it can be perused that women with ‘good’ family status were more empowered and were involved in CDM irrespective of their employment status. A significantly higher percentage of UEW with a good family status were also found to be involved in CDM as compared to their counterparts (p=0.0086). Our finding is on par with other studies that women with fair and poor family status have partial and limited involvement in decision making respectively. Highly significant differences were noted in the intra-group comparison (p<0.0001).

**Health status of women**

Status of women in their family has a profound effect on their health and well-being. According to the assumptions of the gender model, for women, family situations are relatively predicted to have a stronger impact on their well-being than work conditions. (14) Hence influence of family status of women was compared with the degree of general health distress women experienced.

---

**Table 6: Comparison of family status with extent of General health distress experienced by the subjects**

<table>
<thead>
<tr>
<th>FAMILY STATUS</th>
<th>GENERAL HEALTH DISTRESS n (%)</th>
<th>Chi value/ P value/df</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EMPLOYED WOMEN (n=397)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FAMILY STATUS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UNEMPLOYED WOMEN (n=272)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mild</td>
<td>Moderate</td>
</tr>
<tr>
<td>Good n=114</td>
<td>104 (91)</td>
<td>10 (9)</td>
</tr>
<tr>
<td>Fair n=278</td>
<td>259 (93)</td>
<td>19 (7)</td>
</tr>
<tr>
<td>Poor n=5</td>
<td>3 (60)</td>
<td>2 (40)</td>
</tr>
<tr>
<td>Chi value/</td>
<td>7.71</td>
<td>p=0.021, df=2</td>
</tr>
<tr>
<td>P value/df</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FAIR n=278</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Good n=56</td>
<td>56 (100)</td>
</tr>
<tr>
<td></td>
<td>Fair n=209</td>
<td>197 (94)</td>
</tr>
<tr>
<td></td>
<td>Poor n=7</td>
<td>6 (86)</td>
</tr>
<tr>
<td></td>
<td>Chi value/</td>
<td>4.63</td>
</tr>
<tr>
<td></td>
<td>P value/df</td>
<td></td>
</tr>
</tbody>
</table>

---

**Table 7: Influence of family status and employment status on the sufferings due to pre-menstrual symptoms**

<table>
<thead>
<tr>
<th>FAMILY STATUS</th>
<th>PREMENSTRUAL SYMPTOMS n (%)</th>
<th>Chi value/ P value/df</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EMPLOYED WOMEN (n=394)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FAMILY STATUS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UNEMPLOYED WOMEN (n=272)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mild</td>
<td>Moderate</td>
</tr>
<tr>
<td>Good n=113</td>
<td>64 (57.0)</td>
<td>47 (42.0)</td>
</tr>
<tr>
<td>Fair n=276</td>
<td>147 (53.0)</td>
<td>127 (46.0)</td>
</tr>
<tr>
<td>Poor n=5</td>
<td>2 (40.0)</td>
<td>3 (60.0)</td>
</tr>
<tr>
<td>Chi value/</td>
<td>8.43</td>
<td>p=0.0146, df=2</td>
</tr>
<tr>
<td>P value/df</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Poor n=7</td>
<td>2 (40)</td>
</tr>
<tr>
<td></td>
<td>Chi value/</td>
<td>10.6, p=0.0050, df=2</td>
</tr>
<tr>
<td></td>
<td>P value/df</td>
<td></td>
</tr>
</tbody>
</table>

It is evident from the table 6 that women (EW&UEW) irrespective of their status in their family experienced mild to moderate distresses. Comparison of GHD experienced by EW and UEW showed no significant difference. However, among employed, women with poor family status experienced moderate GHD at a higher percentage than their counterparts. It is worth to note that the inverse relationship between family status and GHD among these women (EW and UEW). However the difference was statistically significant among the employed women (p=0.021).

This could be a cumulative effect of stress (social and biological) at varying levels experienced by the employed women, which have an added influence on their health status. (15,16) It can be seen from the table 7 that none of the UE women suffered severely, majority of women in the two groups experienced mild to moderate PMS. The pattern of sufferings women experienced in the two groups with family status fair and poor did not differ significantly.

PMS were found to differ among employed and unemployed women with ‘Good’ family status. Chi Sq analysis exhibited significant association (p=0.051) between the two groups. Higher percentage of employed women had moderate sufferings as compared to the unemployed women.
The intra group comparison revealed that family status of women exerts significant effect on the degree of PMS experienced. Higher percentages of women (EW and UEW) with poor family status seemed to experience moderate PMS than those with good and fair status. The differences were statistically significant (EW p=0.0148; UEW p=0.0050).

**Depression, Anxiety and Stress:** With rise in mental illness and its detrimental effect on the overall health and well-being of the women it was crucial to assess family environment of women participants to understand its impact on their well-being.

Stress is a mild form of mental state but if persists for long period may lead to severe conditions exhibiting symptoms related to anxiety and depression. Anxiety and depression are the mental states expressing the highest form of stress. Unfulfilled desires, incompetency, restrictions, incomplete and unfinished tasks, activities and responsibilities, lack of recognition and respect are a few major reasons, and especially because of their repetitive nature. (17,18)

Hence the influence of family status on the occurrence of depression, anxiety and stress among EW and UEW was analyzed.

| Table 8: Influence of family status on occurrence of depression, anxiety and stress among the subjects |
|-------------------------------------------------|-------------------------------------------------|
| DASS                                             | EMPLOYED WOMEN                                  |
| FAMILY STATUS                                   | UNEMPLOYED WOMEN                                |
| GOOD n=94                                        | UNEMPLOYED WOMEN                                |
| POOR n=5                                        | POOR n=7                                        |
| GOOD n=47                                        | GOOD n=185                                      |
| FAIR n=210                                      | FAIR n=185                                      |
| FAIR n=185                                      |                                |
| DEPRESSION                                      | DEPRESSION                                      |
| Normal                                          | Normal                                          |
| Mild                                            | Mild                                            |
| Moderate                                        | Moderate                                        |
| Severe                                          | Severe                                          |
| Chi Value/ p value/df                          | 23.25, p=0.0007, df=6                          |
| ANXIETY                                         | 13.14, p=0.00408, df=6                          |
| Normal                                          | Normal                                          |
| Mild                                            | Mild                                            |
| Moderate                                        | Moderate                                        |
| Severe                                          | Severe                                          |
| STRESS                                          | STRESS                                          |
| Normal                                          | Normal                                          |
| Mild                                            | Mild                                            |
| Moderate                                        | Moderate                                        |
| Severe                                          | Severe                                          |
| Chi Value/ p value/df                          | 13.89, p=0.0308, df=6                          |
| It is evident from table 8 that the magnitude to which women were inflicted with depression, anxiety and stress among the two groups were essentially similar (ranging from mild to moderate). However, intra group comparison suggests that as the level of family status decreased the degree of depression, anxiety and stress. Stress increased among women in both the groups and the differences were statistically significant (EW depression p=0.0007, anxiety p=0.0408, stress p<0.0001; UEW depression p<0.0001, anxiety p=0.0018, stress=0.0308).

- **Overall health and nutritional status:** a cumulative influence of socio demographic and employment confounders

A perusal of table 9 conveys an important inference about correlation between employment and family status with those of health issues of women. Family status correlated positively with GHD (p < 0.0001) and PMS (p <0.0025) among UEW, while family status correlated with GHQ (p <0.009) for employed women.
Table 9: Correlation of family status with GHD, PMS, GHQ, mental health and BMI of the subjects

<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlates</th>
<th>EMPLOYED WOMEN</th>
<th>UNEMPLOYED WOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>r Value</td>
<td>P Value</td>
</tr>
<tr>
<td>FAMILY STATUS</td>
<td>GHD</td>
<td>0.1026</td>
<td>0.0906</td>
</tr>
<tr>
<td></td>
<td>PMS</td>
<td>0.0289</td>
<td>0.6349</td>
</tr>
<tr>
<td></td>
<td>GHQ</td>
<td>0.1573</td>
<td>0.0092</td>
</tr>
<tr>
<td></td>
<td>DEPRESSION</td>
<td>0.2829</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td></td>
<td>ANXIETY</td>
<td>0.1885</td>
<td>0.0018</td>
</tr>
<tr>
<td></td>
<td>STRESS</td>
<td>0.3086</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td></td>
<td>BMI</td>
<td>0.0020</td>
<td>0.9739</td>
</tr>
</tbody>
</table>

Mental status seemed to be highly sensitive to family status since depression, anxiety and stress correlated significantly to family status. It is obvious therefore women, in general, are sensitive to their status in the family and develop stress due to lack of priority and indifferent attitudes in the family. (19,20) Further, family status was found to be correlated significantly to GHD, PMS and BMI among the unemployed and GHQ among the employed group. It is apparent from our results that employment offers autonomy to women that can neutralize the burden of multitude of responsibilities borne by women. On the other hand unemployment plunks women to dependency that cause physical and mental trauma. It is worthwhile explaining that involvement in decision-making and family status is most important factors influencing women in general. Studies have revealed that lower family status causes burden over women limiting their horizons and act as stressors affecting the physiological and psychological wellbeing of women. (21,22)

CONCLUSION

History bears evidences of women being given low status in the family. She is deprived of leading an authoritative life in all spheres of social life especially in developing countries like India. Certain characteristics of women have helped them make remarkable indentations proving her worth, her hard work, and dedication and sense of sharing responsibilities. She strongly influences the moral, social and creative development of her children. But she gets treatment of a second class citizen; this bears a definite influence on her “self” and emotional health. With the scientific advancements and changing societal concepts the situation has improved but to a limited extent. Therefore family status of women continues to remain a major factor affecting her overall health. The study reveals that Involvement of women in the family decision making and employment compliment in the improved family status of the women. Freedom to exercise preference in family matters is an equally important auxiliary parameter indicating status of women in the family. Women irrespective of their employment status experienced health distresses, menstrual issues and had poor mental health.

Although employment was found to contribute positively by improving the family status of women, it was to a limited extent. Our results have brought forth interesting information that women in general are at the stake of developing stress. However unemployed women seem to have a greater impact on their physical and mental health due to their poor family status and lesser control over family dynamics and decision making. Hence it is important to strengthen women’s influence within the household to raise their relative position in our society.

ACKNOWLEDGEMENT

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Conflict Of Interest: None

REFERENCES
17(1/2):96-131.
8. Dangol R. Women empowerment through income generation programme at a village development committee in Lalitpur district of Nepal. 2010, North South University, Bangladesh. 2010.

The Factors Affecting Performance of Nurse in Health Care Giver at Internal Room Hospital Public Jayapura

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Corresponding Author: Shanty

ABSTRACT

Background: Nurses as health workers as human resources in the service process that allows patients to conduct studies, nursing diagnoses, planning, implementation and evaluation. Characteristic factors including age, gender, education, years of service, motivation and attitudes can give rise to needs and responsibilities for external training.

The purpose of the study: to determine the factors that influence the performance of nurses in nursing care in the inpatient ward Jayapura Regional General Hospital of Papua Province.

Research Methods: Research with cross sectional design. The study was conducted in June 2018 in Jayapura Public Hospital with 111 people in the inpatient room. Data were obtained using questionnaires and analysis using chi square and logistic regression.

Results: Factors that influence the performance of nurses in providing nursing care are motivation (ρ-value = 0.003; RP = 2.104; CI95% = (1.287 - 3.440), attitudes (ρ-value = 0.000; RP = 2.761; CI95% = (1.765 - 4.320) and supervision (ρ-value = 0.000; RP = 4.014; CI95% = (2.397- 6.724). Factors that do not affect the performance of nurses of the same age (ρ-value = 0.198; RP = 0.716; CI95% = (0.463 - 1,108), gender (ρ-value = 0.680, RP = 1,158; CI95% = (0.7334 - 1.827), education (ρ-value = 1.0, RP = 1.039; CI95% = (0.543 - 1.990), working life (ρ-value = 0.048; RP = 0.615; CI95% = (0.402 - 0.944), training (ρ-value = 0.554; Rp. 0.838; CI95% = (0.538 - 1.304), medium means (ρ-value = 0.196; RP = 1.047; CI95% = (0.911 - 2.173), comfort of the work environment (ρ-value = 0.080; RP = 1.555; CI95% = (0.988 - 2.448). Ther is dominant factor of nurse performance to health care giver is comfort of the supervisor, attitude, work environment, and motivation.

Keywords: Performance, Nurse, Health Care Giver, Hospital

1. INTRODUCTION

The hospital has the function of holding medical services, nursing services, referral services, education and training, administrative and financial research, development. The quality of hospital health services provided is determined by the values and expectations of the recipient of the service. Besides that, the emphasis on service to high quality must be achieved at a cost that can be accounted for (Azwar, 2013). According to Nursalam (2015), the implementation of nursing care is part of the process of nursing care that is carried out systematically by recording the stages of the care process given to the patient including reviewing, nursing diagnoses, planning, implementation and evaluation. The phenomenon that occurs related to nursing documentation also in the implementation is often not in accordance with the standards of nursing care by nurses.

The Jayapura Regional General Hospital with a total nursing staff of 255 people with various levels of SPK education to undergraduate nursing. Data The total number of inpatients in 2015 was 13,383 patients, in 2016 there were 15,044 patients and in 2017 there were 17,455 patients. From the existing data shows that nurse at the Jayapura Regional General Hospital have not shown maximum performance.
This can be seen from the application of nursing care based on the results of observations in March 2018 in the inauguration room of the Jayapura Regional General Hospital from the results of observing the implementation of nursing care that was not indicated by the absence of complete nursing care documentation. This indicates nurses lack responsibility for nursing care for patients, because in nursing care is a systematic practice in the provision of nursing care. The purpose of this research is to find out the factors that influence the performance of nurses in the provision of nursing care in the inpatient ward of Jayapura Public Hospital.

2. MATERIALS AND METHODS

This type of research is quantitative with a correlation method with a cross sectional study design. The study was conducted in June 2018 in Jayapura Public Hospital with a population of 111 inpatient nurses. Data were obtained using questionnaires and analysis using chi square and logistic regression.

3. RESEARCH RESULTS

Bivariate Analysis

a. Effect of nurse age on performance in providing nursing care

<table>
<thead>
<tr>
<th>No</th>
<th>Age</th>
<th>performance in providing nursing care</th>
<th>Number</th>
<th>p-value</th>
<th>RP</th>
<th>CI95%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less</td>
<td>Good</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>1</td>
<td>≤ 30 year</td>
<td>24</td>
<td>38.5</td>
<td>43</td>
<td>64.2</td>
<td>67</td>
</tr>
<tr>
<td>2</td>
<td>&gt; 30 year</td>
<td>22</td>
<td>50</td>
<td>22</td>
<td>50</td>
<td>44</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>46</td>
<td>41.4</td>
<td>65</td>
<td>58.6</td>
<td>111</td>
</tr>
</tbody>
</table>

Based on Table 1, it shows that of the 67 nurses aged <30 years as many as 24 people (35.8%) had performance in the provision of less and good nursing care as many as 43 people (64.2%). Whereas from 44 nurses aged > 30 years, there were 22 people (50%) who had performance in giving less and good nursing care as many as 22 people (50%). The chi square test results obtained p-value = 0.198 > 0.05 and the value of RP = 0.716; CI95% = (0.463 - 1.108). This means that there is no significant influence between the age of the nurse on performance in the provision of nursing care.

b. Sex influence on performance in providing nursing care

<table>
<thead>
<tr>
<th>No</th>
<th>Sex</th>
<th>performance in providing nursing care</th>
<th>Number</th>
<th>p-value</th>
<th>RP</th>
<th>CI95%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less</td>
<td>Good</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>1</td>
<td>Male</td>
<td>16</td>
<td>45.7</td>
<td>19</td>
<td>54.3</td>
<td>35</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>30</td>
<td>39.5</td>
<td>46</td>
<td>60.5</td>
<td>76</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>46</td>
<td>41.4</td>
<td>65</td>
<td>58.6</td>
<td>111</td>
</tr>
</tbody>
</table>

Based on Table 2, it shows that of the 35 nurses who were male, there were 16 people (45.7%) who had performance in giving less and good nursing care as many as 19 people (54.3%). While from 76 nurses with female gender, there were 30 people (39.5%) who had performance in giving less and good nursing care as many as 46 people (60.5%). The chi square test results obtained p-value = 0.680 > 0.05. This means that there is no significant effect between the sex of nurses on performance in the provision of nursing care. When viewed from the value of RP = 1.158; CI95% = (0.7334 - 1.827) interpreted that gender is a risk factor for nurses' performance in providing nursing care at the Jayapura Regional General Hospital.

c. The effect of education on performance in the provision of nursing care

<table>
<thead>
<tr>
<th>No</th>
<th>Education</th>
<th>performance in providing nursing care</th>
<th>Number</th>
<th>p-value</th>
<th>RP</th>
<th>CI95%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less</td>
<td>Good</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>1</td>
<td>&lt; D-III nurse</td>
<td>6</td>
<td>42.9</td>
<td>8</td>
<td>57.1</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>&gt; D-III nurse</td>
<td>40</td>
<td>41.2</td>
<td>57</td>
<td>58.8</td>
<td>97</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>46</td>
<td>41.4</td>
<td>65</td>
<td>58.6</td>
<td>111</td>
</tr>
</tbody>
</table>

Based on Table 3, shows from 14 nurses with <D-III nursing education, there were 6 people (42.9%) had performance in giving less and good nursing care as many as 8
people (57.1%). A total of 97 nurses with education > D-III Nursing, there were 40 people (41.4%) had performance in the provision of less and good nursing care as many as 57 people (58.8%). The chi square test results obtained p-value = 1.000 > 0.05. This means that there is no meaningful influence between nurse education on performance in the provision of nursing care. When viewed from the results of the prevalence ratio (RP) test the value is 2.104; CI95% = (1.287 - 3.440) which is interpreted that nurses with low work motivation are less likely to provide nursing care as many as 29 people (54.7%). The chi square test results obtained p-value = 0.554 > 0.05 and the value of Rp 0.838; CI95% = (0.538 - 1.304). This means that there is no meaningful influence between nurses' training on performance in providing nursing care.

d. Effect of tenure on performance in the provision of nursing care

<table>
<thead>
<tr>
<th>No</th>
<th>Working period</th>
<th>Performance in providing nursing care</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less</td>
<td>Good</td>
</tr>
<tr>
<td>1</td>
<td>1 ≤ 5 year</td>
<td>24</td>
<td>33,8</td>
</tr>
<tr>
<td>2</td>
<td>≥ 5 year</td>
<td>22</td>
<td>55</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>46</td>
<td>41,4</td>
</tr>
</tbody>
</table>

p-value = 0.048; RP = 0.615; CI95% = (0.400 - 0.944)

Based on Table 4, it shows that out of 71 nurses with <5 years working period, there are 24 people (33.8%) who have performance in giving less and good nursing care as many as 47 people (66.7%). While from 40 nurses with a service period of> 5 years, there were 22 people (55%) who had performance in giving less and good nursing care as many as 18 people (45%). Chi square test results obtained p-value = 0.048 <0.05; Rp = 0.615; CI95% = (0.400 - 0.944) which means there is no significant effect between the period of nurse's work on performance in providing nursing care.

e. Effect of training on performance in the provision of nursing care

<table>
<thead>
<tr>
<th>No</th>
<th>Training</th>
<th>Performance in providing nursing care</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less</td>
<td>Good</td>
</tr>
<tr>
<td>1</td>
<td>Never</td>
<td>22</td>
<td>37,9</td>
</tr>
<tr>
<td>2</td>
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<td>24</td>
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</tr>
<tr>
<td>Total</td>
<td></td>
<td>46</td>
<td>41,4</td>
</tr>
</tbody>
</table>

p-value = 0.554; RP = 0.838; CI95% = (0.538 - 1.304)

Based on Table 5, it shows that out of 58 nurses who had never attended training, there were 22 people (37.9%) who had performance in giving less and good nursing care as many as 36 people (62.1%). Whereas from 53 nurses who had received training, there were 24 people (45.3%) who had performance in giving less and good nursing care as many as 29 people (54.7%). The chi square test results obtained p-value = 0.554 > 0.05 and the value of Rp 0.838; CI95% = (0.538 - 1.304). This means that there is no meaningful influence between nurses' training on performance in providing nursing care.

f. Effect of work motivation on performance in providing nursing care

<table>
<thead>
<tr>
<th>No</th>
<th>Work Motivation</th>
<th>Performance in providing nursing care</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less</td>
<td>Good</td>
</tr>
<tr>
<td>1</td>
<td>Low</td>
<td>31</td>
<td>56,4</td>
</tr>
<tr>
<td>2</td>
<td>High</td>
<td>15</td>
<td>26,8</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>46</td>
<td>41,4</td>
</tr>
</tbody>
</table>

p-value = 0.003; RP = 2.104; CI95% = (1.287 - 3.440)

Based on Table 6, it shows that of the 55 nurses with low work motivation, there were 31 people (56.4%) who had performance in giving less and good nursing care as many as 24 people (43.6%). While from 56 nurses with high work motivation, there were 15 people (26.8%) who had performance in giving less and good nursing care as many as 41 people (73.2%). The chi square test results obtained p-value = 0.003 <0.05. This means that there is a significant influence between nurses’ work motivation on performance in providing nursing care. When viewed from the value of RP = 2,104; CI95% = (1,287 - 3,440) which is interpreted that nurses with low work motivation are less likely to provide nursing care 2,104 times greater than nurses with high work motivation.
4. DISCUSSION

4.1. Effect of age of nurses on performance in providing nursing care

The results showed that there was no significant effect between the age of the nurse on performance in providing nursing care in Jayapura Public Hospital (\(\rho\)-value = 0.198). The absence of significant influence between age and performance on the provision of nursing care from the distribution of nurses aged <30 years as much as 35.8% is less while nurses aged >30 years 50% have performance in the provision of less nursing care. This shows that at age does not indicate a difference in providing nursing services with less categories. This is in accordance with the theory put forward by Dessler (2006), there is a productive age limit of someone in the age that allows to survive with the strength of his work. There is also a decrease in ability to produce work due to age. Productive age is at the age of 25 years which is the beginning of individual career, and aged 25-30 years is a determining stage for someone to choose the field of work that is suitable for the individual's career, age 30-40 years is the stage of establishing career choices to achieve goals, and long when someone decides on a suitable job choice is 5 years.

4.2. Sex influence on performance in providing nursing care

The results showed that there was no significant effect between the sex of nurses on performance in the provision of nursing care (\(\rho\)-value = 0.680). The absence of a significant influence between the sexes in this study was caused by 45.7% of respondents who were male having a performance in giving less and good nursing care as much as 54.3%. While nurses with female sex, as much as 39.5% had performance in giving less nursing care and good as much as 60.5%. This is in accordance with the theory put forward by Robbins (2006), there is no significant difference between gender and employee performance. This is reinforced from the results of the prevalence ratio that gender is not meaningful to the performance of the provision of well-done nursing care.

According to Nursalam (2015), gender differences in work are strongly influenced by the type of work to be done. In special jobs, such as physical work, gender is very influential on the success of work and is better done by men, but in nurse work it is almost equally so that it is influenced by sufficient skills. But there is another positive side in a woman's character that is obedience and obedience in work, this will affect personal performance.

4.3. The effect of education on performance in the provision of nursing care

The results showed that there was no significant effect between nurse education on performance in service (\(\rho\)-value = 1.000). Education is one of the demographic characteristics that can affect a person both on the environment and certain objects (Ilyas, 2002). A person's learning process will influence the level of education so that it can provide a response to something that comes from outside. Highly educated people will be more rational and creative and open to accepting various renewal efforts, he will also be more able to adapt to various updates.

4.4. Influence of working period on performance in providing nursing care

The results of the study showed that there was no significant effect between the duration of the nurse's work on performance in providing nursing care in Jayapura Public Hospital (\(\rho\)-value = 0.048). The results of the study were obtained from nurses with a working period of <5 years, 33.8% had a performance in giving less nursing care, while nurses with a service period of> 5 years as much as 55% had a performance in giving less nursing care. This shows a percentage that is not much different, which concluded that the same had the opportunity to have performance in the provision of nursing care.
3. Effect of training on performance in the provision of nursing care The results showed that there was no significant effect between nurse training on performance in the provision of nursing care (p-value = 0.554). The absence of a training relationship with the performance of nurses in the provision of nursing care related to the level of nursing education. Where nurses who did not attend training were 37.9% with education> Nursing D-III. The results of this study are in accordance with the opinion of Suara (2010) that nursing care carried out by nurses with nursing D-III education is adequate. In addition, the existence of procedures and supervision can affect the performance of nurses in providing nursing services.

4.5 Effect of work motivation on performance in the provision of nursing care

The results showed that there was an influence between nurses' work motivation on performance in providing nursing care (p-value = 0.003). Motivation is a force that encourages an employee to direct behavior to two things, namely first is the need (needs) that affects the deficiencies experienced by someone at a certain time (Gibson, 1990 in Pasolong, 2008). According to Nursalam (2015) that a person's ability to carry out a task without the support of willingness and motivation, the task cannot be completed.

4.6. Effect of attitudes on performance in the provision of nursing care

The results showed that there was an influence between nurses' attitudes toward performance in providing nursing care in Jayapura Public Hospital (p-value = 0.000). The results showed that nurses with negative attitudes, there were (70%) had performance in giving less nursing care, while nurses with a positive attitude, there were (74.6%) had performance in providing good nursing care. This shows that an increasingly positive attitude will affect performance in providing nursing care. A positive attitude towards the service delivery Nursing documentation needs to be documented as communication between nurses at shift turnover (92%), in addition to the attitude of nurses who are happy to receive awards and praise from superiors, for accomplished work performance (66%) and for improving services nurses can improve their knowledge and skills through education and training (75%).

5. CONCLUSION

1. There is no significant influence between the age of the nurse on the performance in the provision of nursing care (p-value = 0.198; RP = 0.716; CI95% = (0.463 - 1.108).
2. There is no significant influence between the sex of nurses on performance in the provision of nursing care (p-value = 0.680, RP = 1.158; CI95% = (0.7334 - 1.827).
3. There is no significant effect between nurse education on performance in giving nursing care (p-value = 1,000; Rp = 1.039; CI95% = (0.543–1.990).
4. There is no significant influence between the period of employment of nurses on performance in the provision of nursing care (p-value = 0.048; RP = 0.615; CI95% = (0.400 - 0.944).
5. There is no significant effect between nurses' training on performance in giving nursing care (p-value = 0.554; Rp. 0.838; CI95% = (0.538 - 1.304).
6. There is an influence between nurses' work motivation on performance in providing nursing care (p-value = 0.003; RP = 2.104; CI95% = (1.287 - 3.440).

REFERENCES


Risks Assessment due to the Exposure of Copper and Nitrogen Dioxide in the Goldsmith in Malimongan Makassar. 2018 A Mallongi, MN Bustan, N
Shanty et.al. The Factors Affecting Performance of Nurse in Heath Care Giver at Internal Room Hospital Public Jayapura


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Analysis of the Factors Affecting Nurse Compliance to Gived Medicine with Procedural at Yowari Public Hospital Sub Province Jayapura

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³Environmental Health Department, Faculty of Public Health, Hasanuddin University, Makassar.

Corresponding Author: Noferida A. Sada

ABSTRACT

Background: Nurse as the provider of nursing services is one of the activities carried out, namely drug administration which is basically a collaboration between doctors, pharmacists and nurses. Nurses who provide drugs to patients are expected to have basic abilities regarding drugs and principles in drug administration, namely the principle of 6 right, namely true patients, correct medication, correct dosage, correct route, correct time and correct documentation, so that nurses are expected to comply within principles of drug administration.

Research objectives: factors that influence nurse adherence in the principle of drug administration in Yowari District Hospital Jayapura Regency.

Research Method: Analytical cross sectional study design. The population was 163 nurses who served in the inpatient room as a sample with total sampling. Data were obtained using questionnaires and analyzed using chi square test and logistic binary regression.

The results of the study: Factors that have no effect on the principle adherence of drug administration at Yowari Regional General Hospital are age (p-value = 0.095; RP = 0.689; CI95% = (0.476 - 0.997), nurse education (p-value = 0.054; RP = 0.639; CI95% = (0.440 - 0.928) and the gender of the nurse (p-value = 0.475; RP = 0.839; CI95% = (0.564 - 1.250). While the factors that influence the adherence to the principle of drug administration in Yowari Regional General Hospital are years of service (p-value = 0.009; RP = 1.875; CI95% = (1.149 - 3.063), knowledge (p-value = 0.931 Rp: 1.058; CI95% = (0.702 - 1.596), attitude (p-value = 0.000; Rp 2.194; CI95% = (1.558 - 3.095), supervision of the head of the room (p-value = 0.000; RP = 10.548; CI95% = (4.834 - 23.018), punishment (p-value = 0.000 RP = 2.123; CI95% = (1.442 - 3.123). Factor dominant of Nurse compliance in the true principle of drug administration is supervision of the head of the room (p-value = 0.000; RP = 41.202 (15.504 - 109.494).

Keywords: Compliance, Principles of Giving Medicine, Nurses

INTRODUCTION

Medication is the main therapeutic tool that doctors use to treat clients who have health problems, even though the drug benefits the client, the drug also causes serious side effects and risks causing harmful effects. The nurse is responsible for understanding drug work and side effects caused, giving the right medicine, monitoring client responses, and help clients use them correctly and provide information to clients (Wahyuni, 2015).

According to the World Health Organization (WHO) events are not expected in health services in various countries, where 70% of incidents of medication errors can cause permanent disability in patients (WHO, 2015). Based on a national map of incidents of patient safety at the Persi congress, errors in administering drugs were ranked first (24.8%) out of the 10 reported incidents (Ministry of Health, 2015).

Nurses as nursing care providers are one of the activities carried out, namely the administration of drugs which is basically a collaboration between doctors, pharmacists and nurses. Nurses who give drugs to...
patients are expected to have basic abilities regarding drugs and principles in the administration of drugs, namely principle 6 right, including true patient, correct medication, correct dosage, correct route, correct time and correct documentation. The nursing plan must include the plan for administering drugs depending on the assessment of knowledge about work and drug interactions, drug side effects, length of work and doctor's program (Widianintya, 2015).

According to Cahyono (2015), revealed that there is a relationship between the level of nurse knowledge and compliance in patient safety practices in drug administration, where the higher the level of knowledge of nurses about patient safety, the better patient safety practices in nursing care are correct. In accordance with preliminary data collection on the implementation of the principle of drug administration in Yowari Hospital Jayapura Regency, there is no standard operating procedure (SPO) and drug delivery diary, so that the correct principles of drug administration are unknown. Based on these problems, the authors are interested in conducting a study entitled "Factors that Affect Nurses' Compliance in the Principles of Giving Medication in Yowari Hospital Jayapura Regency".

MATERIALS AND METHODS
A. Type of Research
This study is an observational analytic study. Observational analytic research is a study that aims to find relationships between variables by analyzing the data that has been collected. This study uses the Cross Sectional approach, which is by measuring the independent variables and dependent variables only once at the same time (Notoatmodjo, 2012).

B. Place and time of research
1. Research Place
The place of research is at Yowari General Hospital, Jayapura Regency.
2. Research Time
The time of the study was carried out for one month in January 2018.

C. Population and Samples
1. Population
Population is a generalization area consisting of objects / subjects that have certain qualities and characteristics determined by researchers to be studied and then conclusions drawn (Sugiyono, 2013). The population in this study were all nurses in Yowari Hospital as many as 206 people and nurses who served in the inpatient room as many as 163 people.

2. Samples
Samples are partially or representative of the population studied (Arikunto, 2010). The sample method used in this study was saturated sampling, ie all nurses working in the inpatient ward were 163 nurses who were actively working.

RESULTS
a. Effect of nurse age on adherence to the principle of drug administration

Based on Table 1, it shows that of the 124 nurses aged <30 years as many as 46 people (37.1%) were not compliant with the principle of drug administration and as many as 78 people (62.9%) were obedient to the principle of drug administration. The number of 30 respondents aged >30 years, as many as 21 people (53.8%) were not compliant with the principle of drug administration and as many as 18 people (46.2%) obeyed the principle of drug administration. The chi square test results obtained ρ-value = 0.095> 0.05. This means that there is no influence on the age of the nurse on compliance with the principle of drug administration. The prevalence ratio

<table>
<thead>
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<th>No</th>
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<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not obey</td>
<td>Obey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>&lt; 30 age</td>
<td>46</td>
<td>37.1</td>
</tr>
<tr>
<td>2</td>
<td>&gt; 30 age</td>
<td>21</td>
<td>53.8</td>
</tr>
<tr>
<td>Total</td>
<td>67</td>
<td>41.1</td>
<td>96</td>
</tr>
</tbody>
</table>

p-value = 0.095; RP = 0.689; CI95% = (0.476 – 0.997)
test results were obtained Rp. 0.689; CI95% = (0.476 - 0.997) does not include 1 interpreted that age is not a risk factor for compliance with the principle of drug administration.

b. Effect of nurse education on nurse performance

Table 2. Effect of nurse education on adherence to the principle of drug administration in Yowari Hospital Jayapura District

<table>
<thead>
<tr>
<th>No</th>
<th>Education</th>
<th>Compliance with the principle of drug administration</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not obey</td>
<td>Obey</td>
</tr>
<tr>
<td>1</td>
<td>D-III nursing</td>
<td>49</td>
<td>51</td>
</tr>
<tr>
<td>2</td>
<td>S-I nursing</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>67</td>
<td>74.1</td>
</tr>
</tbody>
</table>

\[ p\text{-value} = 0.054; \quad RP = 0.639; \quad CI95\% = (0.440 - 0.928) \]

Based on Table 2, it shows that of the 132 nurses who were educated in Nursing D-III as many as 49 people (37.1%) were not obedient in the principle of drug administration and as many as 83 people (62.9%) were obedient to the principle of drug administration. The total of 31 respondents who were educated in Nursing S-I were 18 people (58.1%) were not obedient in the principle of drug administration and as many as 13 people (41.9%) were obedient in the principle of drug administration. The chi square test results obtained \( p\)-value = 0.054 > 0.05. This means that there is no influence of nurse education on compliance with the principle of drug administration. The prevalence ratio test results were obtained \( RP = 0.639; \ CI95\% = (0.564 - 1.250) \) does not include 1 interpreted that education is not a risk factor for compliance with the principle of drug administration.

c. Effect of nurse gender on nurse performance

Table 3. The influence of nurse gender on compliance with the principle of drug administration in Yowari Hospital Jayapura District

<table>
<thead>
<tr>
<th>No</th>
<th>Sex</th>
<th>Compliance with the principle of drug administration</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not obey</td>
<td>Obey</td>
</tr>
<tr>
<td>1</td>
<td>Male</td>
<td>22</td>
<td>36.7</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>45</td>
<td>43.7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>67</td>
<td>41.1</td>
</tr>
</tbody>
</table>

\[ p\text{-value} = 0.475; \quad RP = 0.839; \quad CI95\% = (1.149 - 3.063) \]

Based on Table 3, it shows that of the 132 nurses who were male as many as 22 people (36.7%) were not obedient in the principle of drug administration and as many as 56 people (63.3%) were obedient in the principle of drug administration. The number of 103 respondents who were female were 45 people (43.7%) were not compliant with the principle of drug administration and as many as 58 people (56.3%) were obedient to the principle of drug administration. The chi square test results obtained \( p\)-value = 0.475 > 0.05. This means that there is no influence of the nurse's sex on compliance with the principle of drug administration. The prevalence ratio test results were obtained \( RP = 0.839; \ CI95\% = (0.564 - 1.250) \) does not include 1 interpreted that gender is not a risk factor for compliance with the principle of drug administration.

d. Effect of nurse's working period on Nurse's performance

Table 4. The influence of the nurse's working period on compliance with the principle of drug administration in Yowari Hospital Jayapura Regency

<table>
<thead>
<tr>
<th>No</th>
<th>Working period</th>
<th>Compliance with the principle of drug administration</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not obey</td>
<td>Not obey</td>
</tr>
<tr>
<td>1</td>
<td>New</td>
<td>53</td>
<td>48.6</td>
</tr>
<tr>
<td>2</td>
<td>Old</td>
<td>14</td>
<td>25.9</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>67</td>
<td>41.1</td>
</tr>
</tbody>
</table>

\[ p\text{-value} = 0.009; \quad RP = 1.875; \quad CI95\% = (1.149 - 3.063) \]

Based on Table 4, it shows that of the 109 nurses whose new service period was 53 people (48.6%) were not compliant with the principle of drug administration and as many as 56 people (51.4%) were obedient to the principle of drug administration. The total of 54 respondents who had a long working period of 14 people (25.6%) were not compliant with the principle of drug administration and as many as 40 people (74.1%) were obedient to the principle of drug administration. The chi square test results obtained \( p\)-value = 0.009 < 0.05. This means that there is an influence of the nurse's working period on compliance with the principle of drug administration. The prevalence ratio test results were obtained...
Based on Table 6, it shows that of the 50 nurses who lacked attitudes as many as 33 people (66%) were not obedient in the principle of drug administration and as many as 17 people (34%) were obedient in the principle of drug administration. The number of 113 respondents with good attitudes as many as 34 people (30.1%) were not obedient in the principle of drug administration and as many as 79 people (69.9%) were obedient to the principle of administering the drug. Chi square test results obtained \( p-value = 0.000 < 0.05 \). This means that there is an influence on the attitude of nurses to compliance with the principle of giving drugs is 2.194 times higher than the attitude of respondents who are good.

**DISCUSSION**

1. Effect of the age of the nurse on compliance with the principle of drug administration

The results showed that the age of nurses in Yowari Hospital did not influence the application of the correct principles of drug administration \( (p-value = 0.095) \). This research is in line with what was done by Wardana (2015) who revealed that age was not meaningful to the application of the correct principles of drug administration to patients. The age of nurses <30 years old as many as 46 people (37.1%) were not obedient in the principle of drug administration and as many as 78 people (62.9%) were obedient to the principle of drug administration. The number of 30 respondents aged >30 years, as many as 21 people (53.8%) were not compliant with the principle of drug administration and as many as 18 people (46.2%) obeyed the principle of drug administration. This shows that the age of nurses aged <30 years and >30 years has equal opportunities for good performance. The absence of
influence can be caused by other factors that influence nurses in the application of the right principles in drug administration because in terms of drug administration does not require heavy physical, but the environment in the hospital such as the attitude and supervision of the head of the room.

Judging from the age limit of a nurse aged > 30 years the oldest is 41 years old and the youngest is 23 years old, so that physically does not affect the performance of nurses who are still in their productive age. The average nurse aged < 30 years is a nurse with an employee honor status or contract, so nurses will compete - race to create good performance in order to be considered and a priority in the reception of civil servants. The same thing was done by nurses aged > 30 years, most of whom were civil servants and had an influence on satisfaction and motivation for career divisions that were good and the same - at the same risk of having good performance, so as not to influence the principle of drug administration. This is in accordance with the theory proposed by Mangkunegara (2012), that age has an indirect effect on individual behavior and performance. The older a person is, not necessarily able to show intellectual maturity both cognitively and psychomotor when doing work. This is probably due to the personal values of the individual concerned, flexibility and other psychological factors that influence.

2. Effect of nurse education on nurse performance

The results of the study showed that nurses' education in Yowari Hospital did not influence the application of the correct principles of drug administration (p-value = 0.639). The education level of the respondents was the highest number of nurses with Nursing D-III education or 81% of respondents from the total nurses who worked in the inpatient ward. Nurses with Nursing D-III education levels were 49 people (37.1%) were not obedient while nurses who had Nursing S1 as many as 18 people (58.1%) were not obedient in the principle of drug administration. This shows that the proportion of nurses who are educated in D-III Nursing and Nursing S-I show the same opportunities that are not compliant in the correct principle of drug administration.

This research is in line with what was done by Fatimah (2015) which revealed that education was not meaningful to the application of the correct principles of drug administration to patients. This is in line with the research conducted by Masela (2014) that the higher the level of education may not necessarily be attributed to compliance with nurses according to standard operating procedures. Education is formal education that has been obtained by someone. In general the categories of nurses can be distinguished technically and professional nurses. Nurses with diploma nursing education are categorized as technical nurses while nurses with higher education for more than four to six years are called professional nurses, where a professional nurse has experience and level of education longer than diploma so that professional nurses better understand the risks of what done (Haslina, 2011).

There is no influence of education due to the standard operating procedures for applying the correct principles in the administration of medicines that have been made and known by each nurse so that the important thing is the compliance of nurses in the correct principle of drug administration which is a rule followed by nurses with existing work steps. In addition, the education level of the Nurse S1 was mostly D-III Education and participated in the development of HR in Yowari Hospital through education.

3. Effect of nurse gender on Nurse's performance

The results showed that the sex of nurses in Yowari Hospital did not influence the application of the correct principles of drug administration (p-value = 0.475). The highest number of nurses is female (63.8%).

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This happens because the nursing profession is generally more attractive to women, considering that the nursing profession is closer to the problems of mother instinct, even though it is under globalization or other reasons such as gender equality or also due to space needs and the development of Science and Technology. Men also began to be considered and taken into account (Nursalam, 2014). This research is in line with what was done by Perwitasari (2012), that gender does not affect the implementation of the right principles in drug administration. 22 nurses in Yowari General Hospital (36.7%) were not obedient in the principle of drug administration and as many as 38 people (63.3%) obeyed the principle of drug administration. The numbers of 103 respondents who were female were 45 people (43.7%) were not compliant with the principle of drug administration and as many as 58 people (56.3%) were obedient to the principle of drug administration.

The results of the study were supported by researchers from Auburn University in 36 hospitals and nursing homes in Colorado and Georgia, USE, in 2002, out of 3216 types of drug administration, 43% were given at the wrong time, 4% were given the wrong drug, of 312 types drug, there was 17% given at the wrong dose. The results of research conducted by the Institute of Medicine in 1999, namely medical errors caused one million injuries and 98,000 deaths a year. And the data obtained by JCAHO also shows that 44,000 of the 98,000 deaths that occur in hospitals each year are caused by medical errors (Kinninger & Reeder, 2003 in Wardana, 2015).

This happens because the sex of a woman or man can make a mistake in giving the drug. Medical errors can occur anywhere in the chain of medicine services to patients, ranging from industry, prescribing, recipe reading, compounding, surrender and supervision to patients. In each link there are several actions, each action has the potential as a source of error. Every health worker in this chain can contribute to errors caused by human error (Cohen, 2014). Errors made by nurses at Yowari Hospital in administering drugs can be caused by doubts about the drug and drug dosage, nurses inaccuracy, and lack of concentration when giving the drug. All these errors are not directly related to gender.

4. The influence of the nurse’s working period on the performance of the Nurse

The results showed that there was an influence on the working period of nurses in Yowari Hospital in the application of the right principle in drug administration (p-value = 0.009). Nurses with a new working period of 53 people (48.6%) were not obedient in the principle of drug administration and as many as 56 people (51.4%) obeyed the principle of drug administration. While nurses with a long working period of 14 people (25.6%) were not obedient to the principle of drug administration and as many as 40 people (74.1%) were obedient to the principle of drug administration. In I shows the results of the prevalence ratio test that the new working period is at risk of non-compliance in the principle of drug administration of 1.875 times higher than nurses who have a long service period. This research is in line with previous research conducted by Wardana (2015), that the working period has an effect on nurses in implementing the correct principle of drug administration. The application of appropriate nursing practices should be applied in hospitals in each region, so as to minimize the level of medical errors caused by human error itself in nursing practice, especially in the administration of drugs that can be fatal. Indicators of errors in drug administration, namely: wrong patient, wrong name, wrong time, wrong way, wrong dose, wrong medication, and wrong documentation (Nursalam, 2014).

According to Swanburg (2002) in Mulyatiningsih (2013) states that the longer a person is in clinical service, the better his...
clinical appearance will be. Learning experiences during work can develop the ability to make decisions that are manifestations of the integration of reasoning scientifically and ethically which departs from real problems in the field of work. in the working period of 6-10 years it is considered to have experience in working even more so if the work period is >10 years, while the working period of <5 years is the period the nurse seeks a deeper experience in increasing professionalism at work.

A longer working period should have an effect on behavior and performance in carrying out patient safety appropriately, but it can also be the opposite of this as stated by Robbins, (2003) in Mulyatiningisih (2013) that people who have worked long

5. Effect of nurse knowledge on Nurse's performance

The results showed that there was no effect on nurses' knowledge in Yowari Hospital in applying the correct principles in drug administration ($p$-value = 0.931). Nurses who lack knowledge as many as 18 people (48.6%) are not compliant with the principle of giving while nurses who have good knowledge as many as 49 people (40.5%) are not compliant in the principle of drug administration. This research is in line with the previous research conducted by Umaternate (2015), that there is no effect of nurses' knowledge in the correct principle in drug administration. Knowledge is the result of knowing and this happens after people do sensing a particular object. Sensing occurs through the five human senses, namely the senses of vision, hearing, smell, taste and touch. Knowledge or cognitive is a very important domain in shaping one's actions (overt behavior) (Prayoto, 2014).

Most nurses have good knowledge (74.2%) so that knowledge is one of the factors in human beings that is crucial in the stage of acceptance of stimuli. In the process of direct perception, people who have experience will always be smarter in responding to everything than those who have absolutely no experience (Simamora, 2012). Knowledge is an important factor in someone making a decision but not always someone's knowledge can avoid him from undesirable events, for example nurses who have good knowledge do not always carry out patient safety properly because all actions taken are at risk for errors in this case identification of patients it is very important to distinguish patients from one another. This can occur due to fatigue and lack of accuracy in work.

6. Effect of nurse attitudes on Nurse's performance

The results showed that there was an influence on the attitude of nurses in Yowari Hospital in applying the correct principle in administering drugs ($p$-value = 0.000). There were 33 nurses (66%) who lacked adherence to the principle of drug administration and 17 people (34%) were obedient to the principle of administering the drug. Whereas 34 people (30.1%) were not obedient in the principle of giving drugs and as many as 79 people (69.9%) obeyed the principle of drug administration. This shows that the attitude of nurses who are equally good increases the compliance in implementing the correct principles of drug administration. The attitude of respondents who are less at risk of compliance with the principle of giving drugs is 2.194 times higher than the attitude of respondents who are good.

The Natasia study (2014) revealed that there was an influence of attitudes towards compliance with the operational standards of procedures. This research is in accordance with the research conducted by Pagala (2017) with the results of the study that attitudes influence nurses' compliance in the implementation according to the operational standard procedures. A good attitude by nurses will carry out better operational standard procedures. Attitude is a form of evaluation or feeling reaction. A person's attitude towards an object is a feeling of supporting or favorable (feeling) and feeling not supporting or
unfavorable (unfavorable) on the object. Attitude is a kind of readiness to react to an object in certain ways (Azwar, 2009 in Virawan, 2014).

According to Nursalam (2014) suggested that attitude is a determinant of behavior. In the form of preparedness for mental preparedness, which is learned in one period of time and organized by experience, and has a certain influence on one's responsiveness to other people, objects, and situations related to it. Attitudes are determined by three components, namely cognitive, affective and behavioral.

The influence of nurses' attitudes is very important in the principle of administering drugs, because with caution is very necessary so that nurses can provide the right medicine. The nurse needs to ascertain whether the drug to be given is on the right track. Nurses also need to consult a doctor if they are not included in the route of administration. Nurses who are lacking or not careful in administering drugs without checking the condition or medical records of patients can have an impact on unwanted events.

Nurses who have a good attitude but are not obedient in the principle of giving drugs properly, this condition indicates that the attitude of nurses in this case does not end in the formation of a behavior, meaning that the positive attitude of the officer is not always realized in the form of positive behavior. This is where the theory put forward by Notoatmodjo (2012), states the attitude as a factor that exists in humans and can cause human tendency to do or behave towards the object at hand

7. The effect of head room supervision on Nurse's performance

The results of the study showed that there was an effect of the supervision of the head of the nurse's ward in Yowari Hospital in the application of the right principle in drug administration (p-value = 0.000). As many as 61 nurses (76.3%) supervised the head of the room who were not obedient in the principle of drug administration and as many as 19 people (23.8%) were obedient to the principle of drug administration. The number of 8 respondents who supervised the head of a good room as many as 6 people (7.2%) were not obedient in the principle of drug administration and as many as 77 people (92.8%) obeyed the principle of drug administration.

The highest prevalence ratio test was obtained at 10.548; CI95% = (4.834 - 23.018) which was interpreted that the supervision of the head of the respondent's room who was less at risk for compliance with the principle of drug administration was 10.548 times higher than the supervision of the head of the respondent's room who was good.

This research is in line with the one carried out by Sagala (2017) that supervision influences nurse compliance in implementing the correct principle of drug administration. Supervision by the head of the room toward nurses who are less compliant with the standard of administration in drug administration is more common in nurses who have supervisors who do not support or lack supervision. Supervisors have big responsibilities in the organization / company, because supervisors are people who are directly related to group members. They lead, manage, admonish, direct, give examples, communicate and motivate. Leadership and communication are the main skills that a supervisor must have. Supervisors must be able to create an environment that supports effective communication, stimulates creativity and motivation. Supervisor works as optimal as possible conducive and comfortable working conditions that cover the physical environment, work atmosphere, and the number of sources of resources needed to facilitate the implementation of tasks. Services that lead to patient safety have a lot to do with the role of nurses as service providers. The nurse's ability to provide safe services for patients is influenced by leadership care, training, communication and consultation.
CONCLUSION

The results of this study can be concluded that the significant factors and the dominant factors that influence nurse compliance in the principle of drug administration are as follows:

1. There is the influence of the nurse's working period on compliance with the principle of drug administration. The prevalence ratio test results were obtained (ρ-value = 0.009; RP = 1.875; CI95% = (1.149 - 3.063)

2. There is an influence of nurses' attitudes towards adherence to the principle of drug administration (ρ-value = 0.000; Rp. 2.194; CI95% = (1.558 - 3.095)

3. There is the influence of supervising the head of the nurse room on adherence to the principle of drug administration (ρ-value = 0.000; RP = 10,548; CI95% = (4,834 - 23,018).

4. There is the influence of nurses' punishment on compliance with the principle of drug administration (ρ-value = 0.000 Rp = 10,548; CI95% = (4,834 - 23,018).

5. There is no influence on the age of the nurse on compliance with the principle of drug administration (ρ-value = 0.095; RP = 0.689; CI95% = (0.476 - 0.997).

6. There is no influence of nurse education on adherence to the principle of drug administration (ρ-value = 0.054; RP = 0.639; CI95% = (0.440 - 0.928).

7. There is no influence of nurse gender on adherence to the principle of drug administration (ρ-value = 0.475RP = 0.839; CI95% = (0.564 - 1,250)

8. There is no influence of nurse knowledge on compliance with the principle of drug administration (ρ-value = 0.931 Rp. 1.058; CI95% = (0.702 - 1,596).

REFERENCES

- Maria I, 2014. Kepatuhan Perawat Dalam Melaksanakan Standar Operasional
Prosedur Pemasangan Infus Terhadap Phlebitis.


Permenkes No. 1691. Tentang Standar Keselamatan Pasien


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Drug Management in Pharmaceutical Installation of Health Office at Jayapura District

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ABSTRACT

Background: Management of Pharmacy Installation medicine Jayapura District Health Office which is a series of planning, procurement, storage, distribution, use, recording and reporting, monitoring and evaluation. From the results obtained there are still many things that need to be addressed, especially from the facilities and infrastructure and the lack of understanding of the officers in calculating the number of quarterly drug needs. Purpose of research: Increasing the need for essential drugs in health facilities, rational use of drugs by the community, ensuring safety, efficacy, and quality of medicines and distribution.

Research method: Qualitative with survey studies conducted in April-May 2018 in Jayapura District Pharmacy Installation and 3 (Three) Puskesmas working areas of Jayapura District Health Office involving 8 (Eight) informants. The data obtained is processed in a qualitative descriptive manner.

Result of research: Drug planning in drug management of the Jayapura District Pharmacy Installation saw the use of drugs in the Puskesmas and the remaining warehouse stock of the Pharmacy District of Jayapura Regency. Insufficient understanding of officers in calculating drug needs. There is no planning team formed. Procurement of drugs according to drug needs is a budget source. Narrow drug storage and the absence of a refrigerator as a place to store reagents. NAPSA cabinets and antiretrovirals have been placed separately and regulated by the FEFO. Medicines are routinely and specifically distributed and drug requests are in accordance with the use and VEN analysis system used. The prescription was received by the clerk then screened the prescription to see the rationality of prescription with a minimum waiting time for prescription services of 5 (Five) minutes at the most 1 (one) hour. For records, only the stock card and expired drugs are destroyed. Monitoring only when the routine distribution goes down to the Puskesmas.

Keyword: Management, drug management, IFK Jayapura

1. INTRODUCTION

Based on Presidential Regulation No. 4 of 2015 concerning the fourth amendment to Presidential Regulation no. 54 of 2010 concerning the procurement of Government goods and services. The selection of drug procurement is done through e-purchasing by e-catalogue system. The principle of electing goods / services providers electronically aims to be efficient, effective, transparent, open, competitive, fair / non-discriminatory and accountable. With the establishment of the E-Catalog Medicine system, all Work Units in the Central and Regional health and First-Level Health Facilities (FKTP) or Advanced Level Health Facilities (FKRTL) in the procurement of medicines for both the National Health Insurance program and other health programs no need to do the auction process, but can directly utilize the drug e-catalog system with E-Purchasing procedures. With the change in the procurement system of this drug, an adaptation process is needed for both the work units as users, industries as drug providers, and distributors. This affects the
procurement of medicines at every level and has an impact on the availability of drugs.

The drug distribution cycle starts when the drug product leaves the factory or distributor, and ends when the drug consumption report is submitted to the procurement unit. Effective drug distribution must have good system design and management by, among other things: keeping the supply of drugs constant, maintaining good quality drugs during the distribution process, minimizing unused drugs because they are damaged or expired with appropriate planning according to their individual needs regions, have accurate records of storage, rationalization of drug depots and provision of information to estimate drug needs. (Clark, 2012).

Every health facility needs to store and manage the medicine. Storage systems aim to ensure safe storage, proper storage in environmental conditions, accurate recording, effective structuring, and monitoring expired drugs, and preventing theft. Storage must be located inside a building that can withstand dry weather. Drugs must be arranged and easily accessed, stored on shelves (most drugs in health facilities are stored on shelves). Space and cooling equipment must be provided for vaccine coolers and other items. Temperature and humidity levels must be controlled within the proper limits, and the space must be well ventilated. (Sallet, 2012). The Health Office as an element of the Regional Government in the health sector is expected to provide the best to the community, the Jayapura District Health Office. One of the Health Office's policies in achieving the vision is the healthy Jayapura community in a new Jayapura.

Based on the results of the initial interviews of researchers, planning of drug needs at the Jayapura District Health Office was carried out by the Head of the Pharmaceutical Section using the consumption method and the Epidemiology method, carried out manually and not computerized, this could make it difficult for officers to determine the amount of inventory. Puskesmas often experience delays in sending the Usage Report file and the Drug Request Sheet (LPLPO) to the Health Office. Observations of researchers at the Jayapura District Health Office Pharmacy Installation show that there is still a build-up of several types of drugs that have not been distributed for quite a long time, this reflects inaccurate planning of drug requirements or poor distribution systems. There is still a build-up of drugs that have expired in the Pharmacy Installation, possibly because of frequent changes in Medical staff and the frequent presence of the Ministry of Health program in administering drugs which ultimately results in cost losses. According to Cheng and Whittemorre (2008), which examines supply chain management in hospitals, a system that is still manual is one of the causes of excess orders which ultimately results in excess inventory. Logistics management is very much determined by planning activities, for example in determining goods whose procurement exceeds requirements. This can damage a whole logistical management cycle, resulting in waste and swelling in costs, eventually the drug is not channeled causing damage or expiration even though it is well maintained at the Pharmacy Installation. (Seto, 2004).

2. MATERIALS AND METHODS

This type of research uses a qualitative approach. The problem approach was carried out by descriptive analysis, namely obtaining in-depth information about the Management of Drug Management in the Jayapura District Pharmacy Installation. According to Bungin (2010), qualitative research is research that views meaning as an inseparable part of one's experience in social life with others. The meaning is not something that is born outside the experience of the object of research or researchers, but becomes the biggest part of the life of research or the object of research.
This research will be conducted at the Jayapura District Health Office on the grounds that this location still has problems in drug management. The object of the research included Head of Pharmaceutical Section, Head of Airu Health Center, Airu Puskesmas patient, Kemtuk Puskesmas Doctor, Kemtuk Puskesmas pharmacy staff, Nimbokrang Puskesmas pharmacy staff. The time of the study is planned to be conducted from April to May 2018. Activities start from the initial survey, search materials, retrieves data to the presentation of research results.

Informants are people who are expected to be able to provide information about situations and conditions regarding the focus of research. The research informants are divided into: a. Key informants (key informants), namely those who know and have basic information needed. The informants who knew the process of managing drugs in this study were: Head of the Pharmaceutical Section. b. The main informants were those who were directly involved in the use of drugs, namely the Head of Airu Pusesmas, Pharmacy staff at Airu Health Center, Pharmacy staff at the Puskesmas Kemtuk, Nimbokrang Community Health Center pharmacy staffs. Participants showed that the most effective role was in the individuals studied, namely doctors and patients. The selection of this study was purposive and snowball

3. RESULTS AND DISCUSSION
1. Research Informants

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Based on table 1, it can be seen that the age of the informants ranged from 28 to 50 years with the number of sex of informants in women as many as 5 (five) people and 3 (three) people who were male. There were 5 (five) informants from outside Papua who were native people and there were 3 (three) native Papuan informants.

2. Drug Planning in the Management of Drug Management in the Pharmacy Installation of the Jayapura District Health Office.

a. Data availability

The availability of data is very important; therefore there were statements from several informants interviewed as follows:

"Jayapura Regency Pharmacy Installation gets data from drug use / average consumption, drug administration program according to age, certain disease season, drug waiting time, damaged / expired drug, remaining drug stock" (Informant 1)

"That collected report is what we use" (Informant 2)

"Use of drugs, waiting times, cases of illness, program medicines, warehouse drug stock and services" (Informant 3)

"We use data from drug use, disease cases, waiting times, program medicines, remaining drugs" (Informant 4)
"Many things are considered in the data for drug availability in the form of drug use, number of diseases, drugs lost and damaged / expired, drugs that are still there, waiting time" (Informant 5)
"Asked to provide diagnostic information on the patient's prescription so that it was easier for officers to calculate drug needs" (Informant 6)

From the interview above, the results can be obtained in the form of information that the six informants are not all the same data collection methods can be seen as the first informant uses a lot of data on average drug use, waiting time, broken / expired drugs, drug delivery program according to age, disease season certain, drug waiting time, drug that is damaged / expired, the remaining drug stock. The second informant only conveyed the collected data that was used. The third informant to the fifth informant collected data on drug use, waiting time, disease cases, program medicines, warehouse drug stock and services. The sixth informant can only provide data from the diagnosis of the patient's disease through writing in the recipe. With the availability of data, many things can be prevented in the form of:

1. Avoid overlapping drugs, which means there is no accumulation of the same drug,
2. Integrated evaluation
3. Similarity of perception
4. Estimates
5. Coordination
6. Use of Funds

b. Planning Method
The statements obtained from several informants were obtained interviewed as follows:
"In planning drugs using consumption methods and epidemiological methods" (Informant 1)
"Consumption methods and epidemiological methods used in our Puskesmas in drug planning" (Informant 2)

"In our opinion, the consumption method and epidemiological method are very helpful in making planning for drug needs" (Informant 3)
"So far, we have always used the Consumption method and the epidemiological method that is highly regarded as accurate in calculating drug needs even though it misses a bit" (Informant 4)
"Using the" us use consumption and epidemiology methods in planning drug needs "(Informant 5)

Based on the results of the interview above, it can be concluded that in the 5 (Lima) informant's drug planning stated that the consumption method and epidemiological method strongly support each other in calculating drug needs and 2 (Two) informants we did not participate in this interview because they did not have a drug plan. The Consumption Method is based on an analysis of previous drug consumption data. Planning drug needs according to consumption patterns has the following steps:

1. Collection and processing,
2. Calculation of estimated drug needs,
3. Adjustment of the number of drug needs with the allocation of funds.

The amount of drug needed according to the consumption method can be calculated by the following formula:

\[
\text{Planned drug needs this year} = \text{Total usage last year} + \text{empty stock} + \text{lead time requirements} + \text{stock buffer} - \text{last year's remaining stock} - \text{damaged drugs / ED}
\]

The advantage of consumption method is that the data obtained is accurate, the easiest method, does not require disease data or treatment standards. If the complete consumption data of the writing pattern does not change and the needs are relatively constant, then the possibility of deficiencies or excess drugs is very small. The disadvantages include not being able to assess the use of drugs in improving prescription writing, deficiencies and excess
drug difficulties, does not require recording good morbidity data.

The Epidemiology method is based on the number of visits, frequency of illness and standard of treatment. The main steps in this method are as follows:
1. Determine the number of residents to be served,
2. Determine the number of case visits based on the frequency of the disease,
3. Providing treatment standards used for planning,
4. Calculating estimated drug needs,
5. Adjustment of drug needs with allocation of funds.

The advantage of epidemiological methods is that estimates of need are close to truth, standard treatment supports efforts to improve drug use patterns. While the disadvantages include requiring time and skilled labor, disease data is difficult to obtain with certainty; good recording and reporting are needed. How to calculate the epidemiological method:

Children:
One episode required 15 ORs of @ 200 ml of ORS.
Number of episodes of 18,000 cases.
The amount of ORS needed = 18,000 X 15 bks
= 270,000 bks @ 200 ml

Adult:
One episode 6 ORS @ 1 liter.
Number of episodes of 10,800 cases.
The number of ORS needed = 10,800 X 6 bks
= 64,800 bks @ 1 liter

a. Time and calculation in preparing drug planning

How the informant calculates a plan for the puskesmas and also calculating the District Pharmacy Installation itself, the interview as follows: "For planning the drug calculation of the Pharmacy Installation of Jayapura Regency is different from the calculation of the Puskesmas because what we take into account is the use of Puskesmas and Pustu for 1 (One) year and the remaining available drug stock" (Informant 1.)
"Puskesmas in a way that is used from drug use" (Informant 2).
"The matter of calculating drug planning is done by looking at the usage / quarterly and remaining drug available" (Informant 3)
"The calculation of drug needs we use the method of using drugs for 3 (three) months plus warehouse stock" (Informant 4)
"We at the puskesmas system calculate the usage of 3 (three) months from routine requests and the remaining stock in the service units and drug warehouses" (Informant 5)

The results of the interviews of the five informants can be concluded that 3 (Three) informants used the method of calculating the use of drugs and drug stock warehouse, while 1 (One) informant how to use the drug for 3 (three) months and calculate the warehouse stock and stock in the unit the service unit and 1 (One) informant, namely from the Jayapura Regency Pharmacy Installation, calculated the drug planning from the use of the Puskesmas and pustu for 1 (one) year and the remaining stock of the drug warehouse. The report on the use of drugs received from the Puskesmas is around 20 (twenty) puskesmas and Pustu around 34 (thirty four) pustu. Not all Pustu who directly report the use of their drugs to the Jayapura Regency Pharmacy Installation only have a distance that is closer to the Jayapura Regency Pharmacy Installation, while the Pustu that is closer to the puskesmas directly reports its use to the puskesmas and the usage report is combined into a report on the use of puskesmas drugs.

The Puskesmas has 2 (Two) systems for drug demand, namely routine requests and special requests where the second is. Routine requests are carried out in accordance with the schedule prepared by the District / City Health Office for each Puskesmas while special requests are made outside the routine distribution schedule if:

1. needs increase
2. avoid emptiness  
3. handling Extraordinary Events (KLB)  
4. the drug is damaged and expired

Drug planning in the Jayapura District Pharmacy Installation uses the calculation method from the beginning of the year stock, drug receipts in a year, the remaining drug stock at the end of the year, drug use for a year, average use of medication, how many months has been emptied, waiting time at count for 6 (six) months, buffer stock 20% and drugs disappear or expire in the count of drug planning, after all are calculated then totalled and the result is the drug needs to be spent in the next year.

The calculations made jointly by the Jayapura Regency Pharmacy Installation with the Puskesmas each make a routine drug request. To calculate the buffer stock, which is 1 (One) month 30 (Thirty) days, if 7 (Seven) days count 20% waiting time and stock buffer 10%, so the total buffer stock is 30% for the count of all drug items every routine request, but at in fact, the Jayapura Regency Pharmacy Installation cannot support a 30% stock with consideration of funds, the availability of drug stock in warehouse and labor, so the Jayapura Regency Pharmacy Installation only supports 25% stock buffer for all drug items and within 9 (nine) days the drug has been received by Puskesmas and Pustu. From a count of 7 (seven) days to 9 (nine) days because Saturday and Sunday are not included in the calculation of work time so that it is added 2 (two) days.

Example:
Use of Paracetamol 500 mg in July 700 tablets, August 500 tablets, September 900 tablets. The drug expires November 1, 2016, the remaining stock is 1000 tablets.

How to count:
- July 700 tablets
- August 500 tablets
- September 900 tablets +
  1,100 Tablets

2,100 tablets + 25% (buffer stock) = 2,625 tablets
2,625 tablets - 1000 tablets = 1,625 tablets
1,625 tablets / 90 days (3 months) 18.1 tablets / day
20 days x 18.1 tablets = 362 tablets / month
2,625 tablets - 362 tablets = 2,263 tablets / 3 months
2,263 tablets / 3 months = 754.3 tablets / month
So Puskesmas A only needs Paracetamol 500 mg every month, which is 754.3 tablets

Requests for drug buffers to the Provincial Pharmacy Installation use estimated needs unless program drugs such as reagents and vaccines must be made according to the number of needs. In the demand for medicines, not all requests can be fulfilled both drug items and quantities because many districts must be served, so that the distribution is evenly distributed and sees the district from the level of drug needs. Drug requests to the Provincial Pharmacy Installation are carried out not every month or not every day but only when experiencing drug shortages or vacancies.

In planning as for matters that need to be considered technically according to the Ministry of Health rules, it is necessary to pay attention to whether the planned drugs include Level I Basic Health services, included in the National Formulary (FONAS), National Essential Medicine List (DOEN), List of health program medicines.

4. CONCLUSION
Based on the results of the study it can be concluded as follows:
1. Drug planning is drug management in the Pharmacy Installation. The Jayapura District Health Office in terms of data availability only looks at the use of the puskesmas and the remaining stock. Calculating the drug needs of many health workers who do not understand calculating quarterly drug needs. There was no formation of a planning team at the Jayapura Regency Pharmacy Installation.
2. Procurement of drugs in drug management in the Pharmacy Installation of the Jayapura District Health Office according to the allocation of drug needs for the budgetary sources

3. Drug storage in drug management in the Pharmacy Installation of the Jayapura District Health Office:
   - From the side of the Puskesmas building all permanent, bertehel, angled angles and good lighting, only the size of the building is still small and feels tight so it cannot accommodate many drugs.
   - For fans as air conditioners, shelves and pallets all puskesmas have only refrigerators that are still sitting in another room.
   - Narcotics / Psychotropic Medicine Cabinets and ARV drugs are good because it is made separately as an ingredient in anticipating an error during preparation of the drug.
   - The arrangement is good because it follows the FEFO (First Expired First Out) system.

REFERENCES


Comparative Evaluation of Effectiveness of Manual and Electric Tooth Brush (Oral - B) in Elimination of Dental Plaque and Gingivitis

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Corresponding Author: Dr. Monica GS

ABSTRACT

Aim: Comparative evaluation of effectiveness of manual and electric tooth brush (oral - B) in elimination of dental plaque and gingivitis.

Materials and methods: Eighty Dental Students in the age group of 18 to 28 years participated in the study for 2 months.

Result: Both the brushes significantly reduced the plaque accumulation, improves gingival health and oral hygiene index, yet powered brushing shows a greater degree.

Conclusion: Powered tooth brush is efficient in controlling the plaque and in improving the oral hygiene and gingival health when compare to manual tooth brush.

Keywords: Plaque, Manual tooth brush, Electric tooth brush, Oral B

INTRODUCTION

Bacterial plaque is the principal etiological agent in gingival and periodontal disease. Thus both prevention and treatment of these conditions must be based on extent of plaque control.

Early studies by Loe et al [1] demonstrated the close association between dental plaque biofilms and inflammation of the gingiva. Supragingival plaque accumulation can be rapid gingival inflammation may appear in few days and if untreated can lead to more serious periodontal conditions.

Daily plaque removal with the toothbrush is an important component of the oral hygiene programs intended to prevent and treat periodontal diseases. This mechanical cleaning procedure by toothbrush is efficient, provided the method used is sufficiently thorough and performed regularly. The bristle toothbrushes appeared about the year 1600 in China. It was first patented in America in 1857 and has since undergone little change. A Swedish water maker Fredick Wilhelm Tornberg is credited with designing the first mechanical toothbrush in 1885. [2] The electric toothbrush is both efficient and surprisingly appealing to patients. For these reasons it has a definite use for some patients, such as, individuals lacking fine motor skills, especially the handicapped and those who lack digital dexterity.

Since the arrival and development of the electric tooth-brush there has been continuing controversy whether or not it is more effective than a manual toothbrush. Some reports seem to indicate that electric toothbrushes are superior to manual one's in terms of removing plaque and improving gingival health. [3,4]

The study aimed to evaluate the safety and efficacy of Oral - B powered toothbrush for the removal of supragingival plaque and improving gingival health and to compare it to a regular manual toothbrush, Oral – B

MATERIALS AND METHODS

The study was conducted in the Department of Periodontics and Oral Implantology, Maharaja Ganga Singh Dental College and Research Centre, Eighty Dental Students in the age group of 18 to 28
years were participate in the study. A proforma was prepared for the study, so as to have a systematic and methodical recording of all observations and information. Clinical examinations were done in the dental chair under standard conditions of light using mouth mirror and William’s periodontal probe.

Scaling and polishing was done for all subjects, and their course were made zero. Each subject then instructed to brush twice a day for two minutes using prescribed brushing technique and tooth paste. Subjects were given appointments to return at 1, 3, 8 weeks. Plaque disclosing agent Alpha Plac DPI (Dental Product India Company, India) was used to visualize plaque on patients teeth and the parameters are assessed by using:

- Oral Hygiene Index - Green and Vermillion. \[^5\]
- Loe and Silness Gingival Index. \[^6\]
- Turesky - Gillmore - Glickman modification of the Quigley Hein Plaque Index. \[^7\]

Group-A consisted of 40 individuals who were assigned to use a manual tooth brush with Modified Bass method of brushing. Group-B consisted of 40 individuals who were assigned to use a powered toothbrush and instructed to the brush with the bristles perpendicular to the gingival margin or sulcus.

**INCLUSION CRITERIA**

- Systemically healthy patient with good oral hygiene
- No periodontal therapy during the past 3 months
- Moderate gingivitis (at least 25% of test sites showing bleeding on probing)
- Ability to attend the hospital at recall intervals
- Full complement of teeth present, except third molars.

**EXCLUSION CRITERIA**

- Poor manual dexterity
- Use of drugs that could affect the state of the gingival tissues
- Patient having mucogingival problem and orthodontic therapy.
- Five or more cavious teeth requiring immediate treatment
- Use of any other supplemental plaque control measures, such as interdental cleansing aids or mouthwashes
- A habit of taking alcohol, smoking or chewing tobacco.

**RESULTS**

Study population consisted of 80 patients randomly divided into manual tooth brush with Modified Bass method of brushing (group 1) and powered tooth brush with circular and vibratory motions (group 2). All the selected patients were assessed for clinical parameters like plaque index, gingival index, oral hygiene index.

The scores were statistically analyzed by calculating the mean values and standard deviation. Unpaired t-test was used to compare values within and between the groups.

**Fig/Table 01: Distribution of Study Subjects According to Gender**

Among the total 80 subjects, 41 (51.2%) were females and 39 (48.8%) were males whose mean value is 0.4875 and standard deviation is of 0.503.

The study population was of 80 subjects randomly divided into 2 groups, where 11 (13.5%) patients was from the age group of 18-20 and 47 (58.7%) subjects from the age group of 21-25 and 22
(27.50%) subjects from age group of 26-28, which is explained in bar diagram below:

The mean age of the study group (group 1+ group 2) is 23.8875 and the standard deviation is of 2.55568 respectively.

The intra and inter group comparison of gingival scores among study subjects using manual tooth brush and electronic tooth brush were analyzed whose p value is highly significant, explained below in the table 3 and 4.

The intra and inter group comparison of plaque scores among study subjects using manual tooth brush and electric tooth brush were analyzed whose p value is highly significant, explained below in the table 5 and 6.

The intra and inter group comparison of plaque scores among study subjects using manual tooth brush and electric tooth brush were analyzed whose p value is highly significant, explained below in the table 5 and 6.

### Table 03: Intra Group Comparison of Gingival Scores among Study Subjects Using Manual Tooth Brush and Electric Tooth Brush

<table>
<thead>
<tr>
<th>Intra group comparison of gingival score</th>
<th>Mean value</th>
<th>Standard deviation</th>
<th>T value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTB</td>
<td>ETB</td>
<td>MTB</td>
<td>ETB</td>
<td>MTB</td>
</tr>
<tr>
<td>0 Day : 1 Week</td>
<td>.16750</td>
<td>.32750</td>
<td>.16233</td>
<td>.19998</td>
</tr>
<tr>
<td>0 Day : 3 Week</td>
<td>.23500</td>
<td>.88750</td>
<td>.26072</td>
<td>.29456</td>
</tr>
<tr>
<td>0 Day : 8 Week</td>
<td>.49250</td>
<td>1.22500</td>
<td>.28500</td>
<td>.32875</td>
</tr>
<tr>
<td>1 Week: 3 Week</td>
<td>.11750</td>
<td>.51500</td>
<td>.18521</td>
<td>.27132</td>
</tr>
<tr>
<td>1 Week: 8 Week</td>
<td>.32500</td>
<td>.85250</td>
<td>.23832</td>
<td>.33049</td>
</tr>
<tr>
<td>3 Week: 8 Week</td>
<td>.20750</td>
<td>1.22500</td>
<td>.18099</td>
<td>.32875</td>
</tr>
</tbody>
</table>

**P VALUE = 0.000 (highly significant)**

### Table 04: Inter Group Comparison of Gingival Scores among Study Subjects Using Manual and Electric Tooth Brush

<table>
<thead>
<tr>
<th>Inter Group</th>
<th>Mean value</th>
<th>Standard Deviation</th>
<th>T value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTB</td>
<td>ETB</td>
<td>MTB</td>
<td>ETB</td>
<td>MTB</td>
</tr>
<tr>
<td>0 Day (M) - 0 Day (E)</td>
<td>1.46200</td>
<td>0.29300</td>
<td>1.58200</td>
<td>0.26500</td>
</tr>
<tr>
<td>1 Week (M) - 1 Week (E)</td>
<td>1.39500</td>
<td>0.23900</td>
<td>1.29300</td>
<td>0.24800</td>
</tr>
<tr>
<td>3 Week (M): 3 Week (E)</td>
<td>1.17700</td>
<td>0.25800</td>
<td>0.97500</td>
<td>0.25200</td>
</tr>
<tr>
<td>8 Week (M): 8 Week (E)</td>
<td>0.97000</td>
<td>0.25200</td>
<td>0.63500</td>
<td>0.23500</td>
</tr>
</tbody>
</table>

**p value = highly significant, whereas the inter group comparison of gingival scores among subject using manual and electric tooth brushing on day 0 and 1** week are 0.0585 and 0.9635 respectively which are not significant.

### Table 05: Inter Group Comparison of Plaque Scores among Study Subjects Using Manual Tooth Brush and Electric Tooth Brush

<table>
<thead>
<tr>
<th>Inter group comparison of plaque score</th>
<th>Mean value</th>
<th>Standard deviation</th>
<th>T value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTB</td>
<td>ETB</td>
<td>MTB</td>
<td>ETB</td>
<td>MTB</td>
</tr>
<tr>
<td>0 Day : 1 Week</td>
<td>.37250</td>
<td>.11000</td>
<td>.19998</td>
<td>.41498</td>
</tr>
<tr>
<td>0 Day : 3 Week</td>
<td>.88750</td>
<td>1.14750</td>
<td>.29456</td>
<td>.37960</td>
</tr>
<tr>
<td>0 Day : 8 Week</td>
<td>1.22500</td>
<td>1.82250</td>
<td>.32875</td>
<td>.39190</td>
</tr>
<tr>
<td>1 Week : 3 Week</td>
<td>1.51500</td>
<td>.33750</td>
<td>.27132</td>
<td>.14796</td>
</tr>
<tr>
<td>1 Week : 8 Week</td>
<td>1.85250</td>
<td>1.01250</td>
<td>.33049</td>
<td>.23771</td>
</tr>
<tr>
<td>3 Week : 8 Week</td>
<td>1.22500</td>
<td>.67500</td>
<td>.32875</td>
<td>.17939</td>
</tr>
</tbody>
</table>

**P VALUE = 0.000 (highly significant)**

### Table 06: Inter Group Comparison of Plaque Scores among Study Subjects Using Manual and Electric Tooth Brush

<table>
<thead>
<tr>
<th>Inter Group</th>
<th>Mean value</th>
<th>Standard Deviation</th>
<th>T value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTB</td>
<td>ETB</td>
<td>MTB</td>
<td>ETB</td>
<td>MTB</td>
</tr>
<tr>
<td>0 Day (M) - 0 Day (E)</td>
<td>2.53800</td>
<td>1.32200</td>
<td>2.46000</td>
<td>0.38400</td>
</tr>
<tr>
<td>1 Week (M) - 1 Week (E)</td>
<td>2.16500</td>
<td>1.65000</td>
<td>.28040</td>
<td>1.9191</td>
</tr>
<tr>
<td>3 Week (M): 3 Week (E)</td>
<td>1.65000</td>
<td>1.31200</td>
<td>1.31200</td>
<td>1.0700</td>
</tr>
<tr>
<td>8 Week (M): 8 Week (E)</td>
<td>1.31200</td>
<td>0.63800</td>
<td>0.10700</td>
<td>1.5000</td>
</tr>
</tbody>
</table>

**p value = highly significant, whereas the inter group comparison plaque score among subjects using manual and electronic tooth brushing on day 0 is 0.3305 which is not significant.**
The intra and inter group comparison of oral hygiene index scores among study subjects using manual tooth brush and electronic tooth brush were analyzed whose p value is highly significant, explained below in the table 7 and 8

Table 07: Intra Group Comparison of Oral Hygiene Index Scores among Study Subjects Using Manual Tooth Brush and Electric Tooth Brush

<table>
<thead>
<tr>
<th>Intra group comparison of oral hygiene index score</th>
<th>Mean value</th>
<th>Standard deviation</th>
<th>T value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MTB</td>
<td>ETB</td>
<td>MTB</td>
<td>ETB</td>
</tr>
<tr>
<td>0 Day: 1 Week</td>
<td>1.60000</td>
<td>3.47500</td>
<td>0.67178</td>
<td>1.35859</td>
</tr>
<tr>
<td>0 Day: 3 Week</td>
<td>3.47500</td>
<td>6.07500</td>
<td>1.01242</td>
<td>1.43915</td>
</tr>
<tr>
<td>0 Day: 8 Week</td>
<td>6.07500</td>
<td>8.65000</td>
<td>1.26871</td>
<td>1.25167</td>
</tr>
<tr>
<td>1 Week: 3 Week</td>
<td>1.87500</td>
<td>2.60000</td>
<td>0.79057</td>
<td>0.81019</td>
</tr>
<tr>
<td>1 Week: 8 Week</td>
<td>4.47500</td>
<td>5.17500</td>
<td>1.01242</td>
<td>0.98417</td>
</tr>
<tr>
<td>3 Week: 8 Week</td>
<td>2.60000</td>
<td>2.57500</td>
<td>0.81019</td>
<td>0.71208</td>
</tr>
</tbody>
</table>

**P VALUE = 0.000 (highly significant)

Table 08: Inter Group Comparison of Oral Hygiene Scores among Study Subjects Using Manual Tooth Brush and Electric Tooth Brush

<table>
<thead>
<tr>
<th>Inter group</th>
<th>Mean± Std. Deviation(M)</th>
<th>Mean± Std. Deviation(E)</th>
<th>T value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Day (M): 0 Day(E)</td>
<td>10.400±1.128</td>
<td>10.400±1.128</td>
<td>0.0000</td>
<td>1.0000  (N.S)</td>
</tr>
<tr>
<td>1 Week (M): 1 Week(E)</td>
<td>8.800±1.091</td>
<td>6.925±0.888</td>
<td>8.4300</td>
<td>0.0001  (H.S)**</td>
</tr>
<tr>
<td>3 Week (M): 3 Week(E)</td>
<td>6.925±0.888</td>
<td>4.325±0.859</td>
<td>13.3074</td>
<td>0.0001  (H.S)**</td>
</tr>
<tr>
<td>8 Week (M): 8 Week(E)</td>
<td>4.325±0.859</td>
<td>1.750±0.670</td>
<td>14.9509</td>
<td>0.0001  (H.S)**</td>
</tr>
</tbody>
</table>

**P value= highly significant, whereas the inter group comparison of oral hygiene score among subjects using manual and electric tooth brushing on day 0 is 1.000 which is not significant.

**DISCUSSION**

The main aim of this study is to evaluate the safety and efficacy of Oral - B powered toothbrush for the removal of supragingival plaque and improving gingival health and to compare it to a regular manual toothbrush (Oral – B). In the mid-1900s, periodontal diseases were believed to result from accumulation of plaque over time, eventually in conjunction with a diminished host response and increased host susceptibility with age. [8, 9] Numerous clinical studies have shown a direct relationship between oral hygiene status, the quality of plaque, and the prevalence and severity of periodontal diseases []

Plaque control normally can be accomplished either mechanically or chemically; sometimes the two procedures are combined. Various chemical and mechanical methods have been advocated for this purpose; however, tooth brushing still remains the most commonly used, effective and safe therapeutic method to remove plaque and also the most reliable means of controlling the diseases including to some extent, controlling dental caries. Various designs of toothbrushes, have been recommended to enhance the mechanical removal of dental plaque like manual, powered, ionic and sonic brushes. [11, 12]

Hand brushing requires a certain degree of manual dexterity. A number of investigations showed that children generally are not capable of obtaining a sufficient oral hygiene level by manual brushing due to their under developed motor skills, lack of knowledge about oral hygiene, effective brushing, less amount of time spent on brushing than recommended or a combination of these. Hence ionic and powered brushes have been introduced to facilitate tooth cleaning and improve the oral hygiene of the patients. [13] Oral-B complete action Power Deep clean tooth brush is battery operated that uses rotated head with criss cross bristle which improve cleaning action. Oral- B cross action pro-health manual tooth brush having criss-cross bristles which removes plaque from tight interproximal spaces. [14]

In the present study, there were no significant differences seen between the treatment groups with respect to day 1 and 4th week mean scores for plaque, p value (p value -0.3305) gingival (p value- 0.0585 & 0.963) oral hygiene index (p value- 1.000),The findings are similar to the findings of Forgas Brockman et al. [15]
plaque score, gingival score, oral hygiene index score in the 8th week showed highly significant results between manual and electric groups (p value - 0.000). These findings are similar to those obtained by Baab and Johnson et al and Drisko et al. [16]

Both the brushes significantly reduced the plaque accumulation, improves gingival health and oral hygiene index , yet powered brushing shows a greater degree. Similar results were obtained from the study conducted by Lazarescu et al. Jongenelis, Martin et al. (1987), Baab and Johnson, and Preber et al. (1991). [10,17,18] The results from the present study is in contrary with William et al. in which they compared the effectiveness of an electric brush and a regular hand brush in preventing or removing dental plaque and concluded that both brushes were equally effective in removing plaque. [19]

On the basis of results obtained in the present study, their comparisons here in along with similar findings by other studies as quoted above, simplicity of use of electrical tooth brush vis-à-vis manual tooth brushes, it is possible to confirm that, the use of former resulted in a significant reduction of dental plaque and improved gingival health over subjects with manual tooth brush.

CONCLUSION

Manual tooth brush has been so far the preferred mode of plaque control. However electric tooth brush has confirmed an effective reduction of dental plaque and gingivitis. It does not require a special technique unlike manual tooth brush where an arduous, time consuming skill has to be mastered.

Thus, despite its high cost vis-a-vis manual tooth brush, electric tooth brush offers a range of benefits. It may replace a manual tooth brush thus, leading to a healthy periodontium.

REFERENCES


*****
An Unusual Foreign Body Aspiration in a Child: A Case Report

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ABSTRACT

Foreign body aspiration is an important and preventable cause of mortality and morbidity in children. FBA can result in a spectrum of presentations ranging from incidental to acutely life threatening. In the literature, numerous unique foreign bodies in the tracheobronchial tree have been reported. Here, we present case of a 2 yrs old child who presented to us with respiratory distress. Based on history and examination diagnosis of a foreign body aspiration was made and an emergency diagnostic rigid bronchoscopy was done retrieving the bulb from left main bronchus.

Key words: Foreign body aspiration, respiratory distress.

INTRODUCTION

Foreign body aspiration is an important and preventable cause of mortality and morbidity in children. Aspiration remains a common problem among young children and is commonly divided into organic and inorganic FB aspiration. Organic material such as nuts and seeds are the most commonly aspirated while the inorganic material include a wide range of objects such as plastic pieces, toy parts, beads, coins, pins etc. (1,2) However, the nature of aspirated FB is influenced by many factors, such as age, sex, nutritional habit, geographical area and socioeconomic status. (3)

Tracheobronchial aspiration is a worldwide problem which often results in life-threatening complications. It occurs primarily in children below 3 years (approximately 75%) due to the lack of adequate dentition and immaturity of swallowing. (3) On the other hand, infants and toddlers use their mouths to explore their surroundings. Foreign body aspiration most commonly presents with respiratory symptoms such as wheeze and cough after a choking episode. (4) A careful history and clinical examination can identify those children who need additional investigation, including bronchoscopy. (5) However, if it causes complete airway occlusion it may lead to asphyxia and unfortunately becomes a cause of death. Here, we present a case of unusual foreign body aspiration (bulb) in a child.

CASE REPORT

A 2 yr-old boy was brought to our causality with sudden onset of respiratory distress. He had no history of preceding illness. According to the information of his mother, child was playing with toys when he developed episodes of choking, gagging and cyanotic spells. Immediately they took child to a local paediatrician who referred him to us suspecting that child might have aspirated something.

On examination child was restless, systemic examination showed heart rate of 150/min respiratory rate of 40/min, with 60 percent SpO2 at room air. On inspection there was subcostal or suprasternal retractions. On auscultation, there was reduced air entry in left lung. X-ray chest (AP view) shows hyperinflation and hyper-translucency in left lung field (obstructive emphysema) (Fig. 1). Due to high suspicion that he might have aspirated something from his toys, we planned for the diagnostic rigid bronchoscopy with high risk consent.
Surprisingly, we got a small bulb in his left bronchus which was removed with endoscopic forceps. (Fig 2,3) Child improved after bronchoscopy and discharged after 2 days.

**DISCUSSION**

Foreign body aspiration can be misdiagnosed as asthma, upper respiratory tract infection, pneumonia, or croup.\(^4\) Delay in diagnosis is associated with increased morbidity.\(^6\)

Chest X-ray is the first diagnostic modality in patients with suspected FBA. It may identify either radio-opaque FB or sequelae of impacted radiolucent ones, e.g., hyperinflation, pneumonia, or atelectasis. Normal chest radiographs can be found in some cases of FBA.

In 1897 Gustav Killer removed a foreign body from lower respiratory tract with a rigid bronchoscope. During 1st past of 20th century Chevalier Jackson perfected endoscopic technique.\(^7\) Patient with the suspicion of FBA should undergo bronchoscopy for the definitive diagnosis and extraction of FB if it presents.\(^8\)

It is usually believed that FBs are lodged preferentially in the right bronchial tree because of its more vertical disposition.\(^9,10\) But some recent authors have suggested that the left bronchia may be the one primarily affected by FBs.\(^11\) In our case also it was in the left bronchus.

Most inhaled foreign bodies in the pediatric age group are food items, with peanuts being the most common.\(^12\) In our case, it was a bulb which child has aspirated while playing, most likely it may be a part of a small wheeler toys. Parents should remain attentive and carefully watch their child activities to avoid such instances.

**CONCLUSION**

Foreign body aspiration is an important and preventable cause of mortality and morbidity in children. Immediate intervention is needed by the specialist doctors to manage such cases.

**Conflict Of Interest**

None declared.

**BIBLIOGRAPHY**


*****
Role of Antithrombin III, Plasminogen, Protein C and Protein S in Deep Vein Thrombosis in Indian Population

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Corresponding Author: Shipra Singhal

ABSTRACT

Deep vein thrombosis is a common condition which is often underdiagnosed. A deficiency of antithrombin III, plasminogen, protein C or protein S, may be associated with a prothrombotic state and can predispose patients to an increased risk of developing deep vein thrombosis. Deficiencies of these anticoagulant proteins may be acquired or congenital. Congenital anticoagulant protein deficiency should be suspected in patients with recurrent deep vein thrombosis without identifiable risk factors. The recognition of this entity is important to prevent development of complications like pulmonary thromboembolism which may prove to be fatal. Role of anticoagulant protein deficiencies as a cause of deep vein thrombosis is scanty studied in the Indian population. The aim of this study is to determine the role of these anticoagulant protein deficiencies as a cause of deep vein thrombosis.

Key Words: Deep vein thrombosis, DVT, Venous thromboembolism (VTE), antithrombin III, plasminogen, protein C, protein S.

INTRODUCTION

Venous thromboembolism (VTE) is a common and potentially life-threatening condition. It continues to be underdiagnosed and undertreated. Awareness among Indians regarding this potentially life-threatening disease is low. The exact incidence of venous thrombosis is difficult to define because of the often-silent nature (80%) of the condition. Incidence of venous thrombosis in Asia, India & South Asian countries is 6-75%. Venous thrombosis is more common in Europe and USA than in Asia and Africa. The difference in incidence has been attributed to differences in genes, diet, fibrinolytic activity and climate. [2-4]

Hospitalized patients are especially at an increased risk for venous thromboembolism as most of them have multiple risk factors. It has been found in autopsy studies that the incidence of VTE in hospitalized patients is as high as 34.7% with the incidence of fatal pulmonary thromboembolism in 9.4%. [5]

Venous thromboembolism has clinical manifestations that range from thrombosis in the deep veins of legs, the iliac and abdominal major vessels to ultimately pulmonary embolism. Venous thromboembolism and deep vein thrombosis rarely occur in the absence of risk factors. Classically acquired risk factors for developing venous thrombosis include advanced age, prolonged immobilization, surgery, fractures, use of oral contraceptive pills, hormone replacement therapy, pregnancy, puerperium, cancer and antiphospholipid antibody syndrome. [6]

Venous thrombosis is related to three pathologic factors commonly known as “Virchow’s triad” which includes:

1. Vessel wall damage.
2. Blood hypercoagulability
3. Blood stasis

Venous thrombi are made up of fibrin, red blood cells, platelets, and leucocytes. These thrombi start in areas of slow blood flow or turbulent blood flow such as large venous sinuses or venous valve cusps and also in areas of direct venous trauma. Activation of the coagulation pathway is the crucial step in the initial formation of venous thrombi. It occurs due to local injury or remote release of mediators. Activation of the pathway alone is inadequate in formation of a venous thrombus as inhibitors of thrombosis such as antithrombin, thrombomodulin-protein C and S, tissue factor pathway inhibitor (TFPI) along with the fibrinolytic pathway will clear the clot. Therefore, persistent activation due to endothelial stimulation along with poor blood flow failing to clear the activated factors, results in an imbalance in the pro and anti-thrombotic pathways which ultimately leads to progression of the thrombus.

Surgical patients have all the three Virchow’s factors present in the peri-operative period. They have venous stasis due to immobilization and surgical positioning. Direct venous injury or remote release of mediators of coagulation due to tissue trauma also increases the risk of venous thrombosis. The risk factors for a surgical patient developing venous thromboembolism have been extensively studied and the important determinants appear to be age, type of surgery, length of procedure, and duration of immobilization. [7]

Genetic abnormalities increasing the risk of thrombotic events have been known since several decades. They include deficiencies of the natural anticoagulants like antithrombin III, protein C, and protein S. Other factors include factor V Leiden, prothrombin G20210A, high levels of factors VIII, IX, XI, homocysteine, and fibrinogen. [8-14]

Antithrombin is a naturally occurring anticoagulant that inactivates serine proteases such as thrombin, and clotting factors IXa, Xa, XIa, and XIIa. Patients with a deficiency of antithrombin are at risk for both arterial and venous thrombosis.

Plasminogen is synthesized in the liver and is present in other cells and in extravascular space of most tissues. Plasminogen is converted to a proteolytic enzyme, plasmin, by plasminogen activators including tissue-plasminogen activator (tPA) and urokinase-plasminogen activator (uPA). The main action of plasmin is to break down fibrin through a series of proteolytic cleavages. Defective fibrinolysis has been associated with increased risk of deep vein thrombosis.

Protein C, a vitamin K dependent protein, is synthesized in the liver and contributes to the inactivation of factor VIII. Deficiency of protein C may be associated with severe thrombotic events.

Protein S, a vitamin K-dependent glycoprotein, is synthesized by the liver and acts as the principal cofactor of protein C. Deficiency of protein S increases the risk of venous thrombosis.

In many cases of Deep vein thrombosis, no predisposing risk factors have been identified. Anticoagulant Protein deficiencies may be a cause in such idiopathic cases.

Our study shall endeavour to determine the levels of anticoagulant proteins like protein C, protein S, Antithrombin III and plasminogen in cases of deep vein thrombosis and their correlation with deep vein thrombosis.

MATERIALS AND METHODS

It was a case control study conducted in Department of Pathology and Department of Surgery, in a tertiary care hospital in New Delhi.

This study was carried out on 60 cases who presented to the surgery department with swelling and crampy pain during walking. On examination, along with assisted duplex scanning they were diagnosed with deep vein thrombosis. These
patients were not receiving any anticoagulant drugs or any other drugs which could interfere with coagulation pathways. These patients also did not have any prior history of any medical illness or any previous surgical history.

Blood from sixty age and sex matched healthy donors from blood bank was taken as controls for comparison. All donors who were receiving any drug which interferes with coagulation pathways were excluded from the study. 2ml of blood sample was taken in EDTA vial. It was centrifuged and then it was run on Automated Nephelometer for the measurement of Antithrombin III and plasminogen. 3ml sample was taken in 3.8% sodium citrate solution in a ratio of 9:1. It was centrifuged at 2500 rpm for 15 minutes and then it was run on the Fully Automated Coagulometer for Protein C and Protein S measurement.

Statistical analysis -
Categorical variables were presented in number and percentage (%) and continuous variables were presented as mean ± SD and median. Normality of data was tested by Kolmogorov-Smirnov test. If the normality was rejected, then non-parametric test was used.

Statistical tests were applied as follows-
1. Quantitative variables were compared using Unpaired t-test/Mann-Whitney Test (when the data sets were not normally distributed) between the two groups.
2. Qualitative variables were correlated using Chi-Square test /Fisher’s exact test.
3. Univariate and multivariate logistic regression was used to assess the association of presence of disease with various parameters.

A p value of <0.05 was considered statistically significant. The data was entered in MS EXCEL spreadsheet and analysis was done using Statistical Package for Social Sciences (SPSS) version 21.0.

RESULTS

Out of all the 60 cases, antithrombin III deficiency was found in 18 cases (30%). In 42 cases the levels of antithrombin III were found to be within the normal range. In the control group, 6 controls (10%) were found to have deficiency of antithrombin III and it was normal in the remaining 54 controls. The correlation was not significant (P value = 0.006).

<table>
<thead>
<tr>
<th>Group</th>
<th>Total</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATIII Not deficient</td>
<td>54 (90.00%)</td>
<td>96 (80.00%)</td>
</tr>
<tr>
<td>Deficient</td>
<td>6 (10.00%)</td>
<td>24 (20.00%)</td>
</tr>
<tr>
<td>Total</td>
<td>60 (100.00%)</td>
<td>120 (100.00%)</td>
</tr>
</tbody>
</table>

Out of the total 60 cases, plasminogen deficiency was found in 5 cases (8.33%). In 55 cases (91.67%) the levels of plasminogen were found to be within the normal range. In the control group, all the controls had normal levels of plasminogen. The correlation was not significant (P value = 0.057).

<table>
<thead>
<tr>
<th>Group</th>
<th>Total</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plasminogen Not deficient</td>
<td>60 (100.00%)</td>
<td>115 (95.83%)</td>
</tr>
<tr>
<td>Deficient</td>
<td>0 (0.00%)</td>
<td>5 (4.17%)</td>
</tr>
<tr>
<td>Total</td>
<td>60 (100.00%)</td>
<td>120 (100.00%)</td>
</tr>
</tbody>
</table>
Out of all the 60 cases, protein C deficiency was found in 13 cases (21.67%). In the remaining 47 cases (78.33%) the levels of protein C were found to be within the normal range.

In the control group, all the controls had normal levels of protein C. The correlation was found to be statistically significant (P value = 0.0001).

Table 3 - The distribution of protein C deficiency in both the groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Case</th>
<th>Control</th>
<th>Total</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not deficient</td>
<td>47 (78.33%)</td>
<td>60 (100.00%)</td>
<td>107 (99.17%)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Deficient</td>
<td>13 (21.67%)</td>
<td>0 (0.00%)</td>
<td>13 (10.83%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>60 (100.00%)</td>
<td>60 (100.00%)</td>
<td>120 (100.00%)</td>
<td></td>
</tr>
</tbody>
</table>

Protein S deficiency was found in 18 cases (30%) out of the total 60 cases. In 42 (70%) cases the levels of protein S were found to be within the normal range.

In the control group, 3 controls (5%) were found to have deficiency of protein S and it was normal in the remaining 57 controls (95%). The correlation was found to be statistically significant (P value = 0.001).

Table 4 - The distribution of protein S deficiency in both the groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Case</th>
<th>Control</th>
<th>Total</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not deficient</td>
<td>42 (70.00%)</td>
<td>57 (95.00%)</td>
<td>99 (82.50%)</td>
<td>0.001</td>
</tr>
<tr>
<td>Deficient</td>
<td>18 (30.00%)</td>
<td>3 (5.00%)</td>
<td>21 (17.50%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>60 (100.00%)</td>
<td>60 (100.00%)</td>
<td>120 (100.00%)</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

Deficiency of natural anticoagulants can either be inherited or may occur during certain life events. Genes for the natural anticoagulants, are inherited from parents. People born with deficiencies of one of the natural anticoagulants inherit one abnormal gene from either their mother or father. Rarely people can inherit abnormal genes from both parents; this often results in severe clotting problems that are diagnosed early in infancy. People who have inherited normal levels of the natural anticoagulants may develop deficiencies in certain situations, such as pregnancy, liver disease, severe infection or other illness, vitamin K deficiency, and certain medications like estrogen, heparin, and warfarin.

Few studies which have been done to assess the role of natural anticoagulants...
in venous thrombotic cases showed that deficiencies of natural anticoagulants are important risk factors which can lead to venous thrombosis.

**CONCLUSION AND RECOMMENDATIONS**

Natural anticoagulant deficiencies are rare and are either inherited at birth or acquired sometime during life. Natural anticoagulant deficiencies are one of many conditions that can increase the risk for developing deep vein thrombosis or venous thromboembolism.

The present study was a case control study which was done on 60 deep vein thrombosis cases who presented to surgery department at Safdarjung hospital, New Delhi. 60 age and sex matched controls were taken from blood bank. An attempt was made to find out the correlation between antithrombin III, plasminogen, protein C and protein S in the patients presenting with deep vein thrombosis.

We found significantly lower levels of protein C and protein S in the cases of deep vein thrombosis as compared with the levels found in controls. In our study, the difference in the levels of antithrombin III and plasminogen in the patients with deep vein thrombosis was not significantly decreased as compared to the controls. Although other studies that have been done in the past have also found significantly lower levels of antithrombin III and other natural antiocoagulants in addition to levels of protein C and protein S. This difference may be due to differences in the genetic and environmental factors of the populations being studied in different studies.

From this study, it was concluded that the deficiencies of natural antiocoagulant proteins can contribute to increased risk of deep vein thrombosis in the Indian population. Hence based on our study we advise that all patients presenting with deep vein thrombosis should be evaluated for deficiencies of natural antiocoagulant proteins. Further research is needed to evaluate the beneficial effects of screening programmes in the people who present with deep vein thrombosis to prevent development of recurrent episodes of deep vein thrombosis and other serious complications like pulmonary thromboembolism.

**REFERENCES**


Psychiatric Advance Directives: An Understanding

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ABSTRACT

Undoubtedly, 2017 is a watershed year for mental health professionals and sufferers; this year witnessed the historic moment of the advance of Mental Health Care Act (MHCA). The importance of this Act cannot be underestimated as it has come as a ray of hope as few rights have been given to the persons with mental illness, first time, like the right to make advance directives. Hence, it can be said that its coming is a tremendous achievement and a beacon of hope for the millions of people. It is a pivotal Act in the battle against the mental illness that also directs the public’s attention toward the ongoing pandemic. Efforts to implement it will cause many challenges as well as renewed optimism. Understanding of concepts related to ADs is essential for mental health professionals as they have an important role to play with severe, persistent, mental illnesses. The purpose of this article is to collect the blinding flashes of insight, as well as the mundane aspects of ADs to begin to understand its benefits and prediction of barriers in its implementation and their possible solution.

Keywords: Person with Mental Illness, Mental Healthcare Act, Advance Directives; Barriers.

INTRODUCTION

Advance Directives (ADs) are the legal right of every adult individual, who has the mental capacity to decide at the time of making ADs, irrespective of his/her previous psychiatric illness as mentioned in the Mental Health Care Act (MHCA), 2017. In ADs, one can specify in writing one’s treatment preferences and/or refusals and/or authorize/nominate representative (NR), who can take future treatment decisions on one’s behalf, in case he/she lacks capacity to do so. It is to be remembered that when the person can make the decision; then one can supersede the previously written ADs at any time or if one wishes. It can be revoked, amended or cancelled by the person who made it, of course, by following the regulations established by the Central Authority (MHCA, 2017). During the making or revoking of ADs person needs to take care of the existing laws and must follow the regulations established by the central authority. It is the duty of the person writing the ADs and his NR to make sure that the treating institute and professionals have access to it when required. It is the duty of every medical officer in-charge/the psychiatrist in-charge of a person’s treatment to give treatment, following valid ADs. Unless he/she or caregiver/NR of the concerned person, have reasons for not to follow the ADs; if it is the case, an application can be made to the relevant board (MHCA, 2017).

For instance, although, MHCA, 2017, makes the direction to every insurer to make provision for medical insurance for treatment of mental illness on the same basis as is available for treatment of physical illness. In the similar context, Anil Gumber, in 2001 found that “more than 90 percent of Indian population and almost all...
the poor are not covered under any health insurance scheme. Their health care needs are primarily met through direct out-of-pocket expenditure on services provided by the public and private sectors”. [2]

Moreover, it protects individuals from receiving ineffective, unwanted, or possibly harmful treatment; and helps in preventing crises and the resulting use of involuntary treatment or safety interventions such as restraint or seclusion; assist in avoiding crises exert more control over own mental health treatment; avert involuntary treatment and enhance person-centered care, and shared decision making; allow for support system involvement in treatment decision making. [3]

What precautions need to be taken care of while making or assessing ADs?

Three criteria should be considered for making ADs:

1. **Age assessment:** Every person, who is not a minor, shall have a right to make an advance directive.

2. **Mental health assessment:** Although, as per MHCA, 2017 [1] an advance directive under sub-section (1) may be made by a person irrespective of his past mental illness or treatment. However, it is critical to assess whether the person is presently suffering from a disorder that may include acute confusion, delirium or drug-induced disorder of cognition; because letting someone go home with poor memory, impaired judgment and little appreciation of risk may be irresponsible or even negligent. [4]

3. **Mental capacity assessment:** One prominent proposal to remedy the discriminatory aspect of the mental health law is to replace the criterion of psychiatric diagnosis with a determination of mental (in) capacity as grounds for detention and involuntary treatment. [5,6] An assessment of capability to make decisions can and should be performed, especially, when lack of capacity to give consent to treatment/admission for care, is in doubt. While assessing the capacity of person, it should be kept in mind that any active psychopathology does impair this capacity, and therein, subjective assessments of competence performed by Physicians without scientific instruments are often inaccurate. [7]

Chapter 3 of MHCA (2017), [1] i.e., “Advance Directive” consists of 9 Sections (5-13) which are presented in the question and answer form for the better understanding of the content specified, as follows:-

I. Who can make Advance Directives (ADs)?

In India “advance directive” means an advance directive made by a person under section 5(1) of Mental Health Care Act, 2017. [1] ADs are legal rights, unless contrary to any existing laws, of every adult individual, who has the mental capacity to make the decision at the time of making ADs in writing, irrespective of one’ previous mental illness. In ADs, one can specify treatment preferences or refusals and authorize/nominate a representative (NR), who can take future treatment decisions; on one’s behalf in the condition when one loses the capacity to do so. In simple words it can be said that ADs are rights of every individual, who is at least 18 years old and mentally capable to make decisions, by which one can express range of wishes in writing, for future treatment, including treatment preferences and refusals, and appoint a person(s), who can make treatment decisions on one’s behalf, in case of lack of decision-making capacity. It is also to be remembered that however, a minor cannot make ADs but as per MHCA, 2017 his “legal guardian shall have right to make an advance directive in writing in respect of a minor and all the provisions relating to advance directive, shall apply to such minor till such time he attains majority”. Whereas the Mental Capacity Act [8] of UK, provides an additional right to British Citizens, i.e., Advance statements/ADs can be given in either written or oral form, with the exception of an advance decision to refuse life-sustaining treatment, which has to be written, signed.
and witnessed in order to be valid. [9]

II. When shall ADs invoke & how long will it remain active?

Mental Health Care Act, 2017, [1] makes it very clear that “An advance directive made under sub-section (1), shall be invoked only when such person ceases to have the capacity to make mental health care or treatment decisions and shall remain effective until such person regains capacity to make mental health care or treatment decisions”. It is to be remembered that ADs shall be invoked if the person is incompetent (loses capacity) to make health care decisions and not applicable if at the time of the treatment, the person is competent to make treatment-related decisions.

III. Is it possible to over-ride the ADs?

As per Mental Health Care Act, 2017, [1] when the person has the capacity to make decision, then one can supersede the previously written ADs at any time or if one wishes, ADs can be revoked, amended or cancelled by the person, of course, by following the regulations made by the Central Authority. However, any ADs made contrary to any law for the time being in-force shall be treated as invalid from the outset. In simple words, it can be said that having mental capacity makes previously written ADs ineffective, and it can be changed by the person at any time, provided having the capacity to do so, at the time he/she wishes to change it. However, it is to be noted that as per the Mental Capacity Act, 2005 of UK, [8] there are certain circumstances when it can be overridden, for example, if there is a risk to oneself or others or if one is detained under the Mental Health Act of said country.

IV. How to make an Advance Directive?

The Mental Health Care Act, 2017, [1] specifies that “An advance directive shall be made in the manner as may be specified by the regulations made by the Central Authority.” It is relevant mention that in some Western countries, to be valid ADs must conform to a specific format including identification of witnesses and notation; in our setting too, recently, Mental Healthcare Rules 2017, [11] specifies the regulations for making ADs, which are as follows: a) An AD shall be made in writing on Form CR- A; b) If an NR is named in the AD he shall sign the AD stating his willingness to act as the NR; c) All ADs shall be signed by two witnesses attesting to the fact that the AD was signed by the person making the AD in their presence; d) The person who makes an AD shall keep a copy with himself and will share a copy with the NR. [11]

V. Who will maintain an online register of ADs?

The Mental Health Care Act, 2017, [1] specifies that “every Board shall maintain an online register of all advance directives registered with it and make them available to the concerned mental health professionals as and when required” [clause (a) of sub-section (1) of section 91]. There is no doubt about the fact that quick and fast access to the available medical data through internet [12] has many advantages; and it can be forecasted that our country is also going to take advantage of these facilities as Mental Healthcare Rules 2017, [11] specifies that ADs shall be made available online within 14 days of the registration with the concerned Board.

VI. How to amend or cancel the ADs?

The Mental Health Care Act, 2017, [1] makes it quite clear that ADs may be revoked, amended or cancelled by the person who made it at any time and the procedure for revoking, amending or cancelling an advance directive shall be the same as for making an advance directive under section 6 (i.e., regulations made by the Central Authority). The Mental Capacity Act of UK, [7] states that this can be changed at any time while one has the mental capacity to do so.

VII. Will ADs be valid in all circumstances?

The Mental Health Care Act, 2017, [1] stipulates that the ADs shall not apply to the emergency treatment given under section 103 (for example-Code of Criminal
Procedure, 1973, etc. i.e., a person concerned in criminal proceedings or under sentence) to a person who made the AD. Whereas, the Mental Capacity Act, 2005 makes it clear that there are certain circumstances when it can be overridden, for example, if there is a risk to oneself or others or if one is detained under the Mental Health Act of UK.

VIII. Do doctors have to follow ADs?

According to Mental Health Care Act, 2017, [1] “It shall be the duty of every medical officer in charge of a mental health establishment and the psychiatrist in charge of a person’s treatment to propose or give treatment to a person with mental illness, following his valid advance directive.” However, under section 11, mental health professional/relative/caregiver of the person shall make an application to the concerned Board to review, alter, modify or cancel the ADs. [1] It is needed to be remembered that mental health professional shall not be held liable for not following a valid advance directive if he has not been given a copy of the valid advance directive. [1]

IX. Who has the Powers to review, alter, modify or cancel ADs?

As per Mental Health Care Act, 2017, [1] “Where a mental health professional or a relative or a caregiver of a person desires not to follow an advance directive while treating a person with mental illness, such mental health professional or the relative or the caregiver of the person shall make an application to the concerned Board to review, alter, modify or cancel the advance directive”. Once the Board receives such an application, it can either uphold, modify, alter or cancel the ADs in question, of course, after giving an opportunity of hearing to the person who made the ADs and all other concerned parties, by taking into consideration the crucial points as mentioned below (Point X).

X. What Points need to be considered by the Board for Review process?

According to Mental Health Care Act, 2017, [1] board can either uphold, modify, alter or cancel the ADs after taking into consideration following five points- (1) did the person making the ADs out of his free will and without any force, and undue influence or coercion; (2) did the person intended to apply the ADs in present circumstances, that may be different from those anticipated; (3) did the person have sufficient information to make the decision; (4) did the person have the capacity to make decision-related to healthcare at the time of making ADs; (5) does the content of written ADs contrary to any law.

XI. What are the duties of the person making ADs and nominated Representative?

Mental Health Care Act, 2017 [1] also specifies the duties of the person who made the ADs as well as one’s NR, i.e., the person who has written the ADs and his NR will have a duty to make sure that mental health professional has access to the ADs when required. Also, the concerned person or the NR shall inform the treating mental health professional about the new AD, [11] if any. The Act also given the right to the legal guardian to make ADs in writing in respect of a minor and all the provisions relating to those ADs shall apply to the concerned minor till the time he attains his majority. [1]

XII. Who has the power to review and modify ADs making procedure?

According to Mental Health Care Act, 2017, [1] Central Authority shall not only regularly and periodically review the use of ADs and make the recommendation for the same but also specify the procedure for making ADs. Besides, it also examines that existing procedure to protect the rights of the persons with mental illness (PMI). Furthermore, it may modify the procedure for making ADs or make additional regulations regarding the procedure for ADs.

XIII. Is it the liability of medical health professionals to follow ADs?

Mental health professionals must follow the ADs, and if there are reasons for not following it, then an application must be made to the concerned board. Mental Health Care Act, 2017 [1] makes it quite clear that
neither any mental health professional shall be held liable for any unforeseen consequences in case one follows valid ADs; nor anyone is held liable for not following valid ADs, in case, not given a copy of the same.

XIV. Are there any additional regulations, regarding the procedure of advance directive:

Recently, Mental Healthcare Rules 2017, [11] mention some other regulations regarding the procedure of ADs, which are as follows: a) All ADs shall be registered at the Mental Health Review Board which has jurisdiction where the person resides; b) No fee shall be charged for registering an AD with the Mental Health Review Board; c) All ADs shall be made available online within 14 days of the registration with the concerned Board; d) There shall be no restrictions on the number of times the person changes an AD; e) Each change shall follow the same process and the previous AD automatically shall become null and void on filing a fresh AD with the Board; f) The concerned person or the NR shall inform the treating mental health professional about the new AD; g) No person shall release any copy of the AD or information in the AD to any unauthorized person or the media. [11]

CONCLUSION

Bridging the gap between treatment need and availability of treatment facilities has become a rallying cry for a generation of treatment providers and identifying and overcoming barriers to successful dissemination of best-practice treatment is a significant priority. Armed with information and treatment choice, we will be in a better position to implement the active, systematic, structured, and testable methods that are in the best interest of the person. The recent actions both in the country and abroad have served as a dramatic example of the need for ADs.

REFERENCES


Oxidative Stress Parameters - A Predictive Tool for the Development of Preeclampsia

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ABSTRACT

Introduction: Preeclampsia, a pregnancy induced hypertensive disorder is known to be responsible for innumerable adverse fetal outcomes. This condition is known to alter the level of thiols in preeclamptic patients. Hence the present study was conducted to assess if the alteration in the levels of thiols could be used as a predictor for detecting preeclampsia and to check for their levels after the administration of L-Arginine.

Material and methods: This study recruited 186 Primigravidae women of age group 18 to 35 years. Doppler ultrasound was performed to categorize the participants into 4 groups. The recruited participants were subjected to blood tests to analyze the level of plasma thiols. Further the level of thiols was evaluated after the administration of L-Arginine.

Results: The plasma level of thiols was assessed in all the four categorized groups. Mean Cysteine levels (54.5) was lower in the subjects with Normal doppler (Group 1) than in subjects with abnormal doppler (Group 2) (114.2) which decreased back to normal after supplementation with Arginine. Similar trends were seen with respect to homocysteine and cysteinyl glycine. On the contrary mean glutathione levels (4.6) were low in subjects with abnormal doppler group 2 than the normal doppler group (6.6).

Conclusion: Altered level, i.e. increased levels of glycine, cysteinyl glycine, homocysteine and decreased levels of glutathione could be used as a marker for preeclampsia.

Keywords: Preeclampsia; L-Arginine; Doppler ultrasound; Glycine; Cysteinyl Glycine; Homocysteine; Nitric oxide

INTRODUCTION

Hypertensive disorders of pregnancy consist of a broad spectrum of conditions associated with significant maternal and fetal mortality and morbidity, preeclampsia being the most common one affecting 5-8\% of the pregnancies.\textsuperscript{(1-2)} According to the World Health Organization (WHO), the incidence is higher in developing countries (2.8\% of live births) than in developed countries (0.4\%).\textsuperscript{(3)} Preeclampsia is defined as pregnancy induced hypertension associated with proteinuria with the onset occurring following the 20\textsuperscript{th} week of pregnancy.\textsuperscript{(4)} It is associated with adverse fetal outcomes, like fetal growth restriction, premature births, fetal hypoxemia etc.\textsuperscript{(5)} It is a major contributing factor accounting to intensive care unit admissions during pregnancy.\textsuperscript{(4)}

There are four major factors implicated in the Etiopathogenesis of Preeclampsia

1. Placental implantation with abnormal trophoblastic invasion of uterine arteries
2. Immunological maladaptive tolerance between maternal/fetal tissues
3. Maternal mal adaptation to cardio vascular system or inflammatory changes of normal
4. Pregnancy leading to endothelial cell activation
5. Genetic factors\textsuperscript{(6)}

More recently, evidence has been found for the role of oxidative stress in the development of preeclampsia. Oxidative stress can be combated both by enzymatic as well as non enzymatic antioxidants.\textsuperscript{(7)}
Thiols constitute the major part of the total body of antioxidants and play a prominent role in defense against the reactive oxygen free radicals. (8) Cysteine, homocysteine, cysteinlyglycine and glutathione are the biologically low molecular mass thiols found in the plasma which help in combating this oxidative stress. (9) According to a well known theory, excess free radicals triggers off preeclampsia in those women who have lowered level of glutathione and higher levels of cysteine, homocysteine and cysteinyl Glycine. (10) It is also a well known fact that there is a dysfunction of the L-Arginine–Nitric oxide system in preeclampsia. Recent studies have shown that supplementation with L-Arginine has improved both endothelial function and oxidant stress (11) Hence this study was conducted to analyze the levels of thiols in pre eclampsia patients and to check for any change in the levels of thiols after the administration of L-Arginine. The main objective of the study was to analyze the level of oxidative stress parameters like cysteine, homocysteine, cysteinlyglycine and glutathione in subjects with normal and abnormal doppler and to analyze their levels after the administration with L-Arginine.

**METHODOLOGY**

Women who are prone to develop preeclampsia can be recognized by abnormal wave patterns in doppler ultrasound between 17-20 weeks of gestation and as early as the 1st trimester (11-14 weeks) of pregnancy. (12) This is based on the principle that there is reduced uteroplacental perfusion as a result of abnormal trophoblastic invasion of the spiral arterioles and in addition there are reduced antioxidants like superoxide dismutase glutathione peroxidase / reductase and an increase of oxidative stress parameters like Cysteine, Homocysteine, cysteinlyglycine. Therefore a uterine artery doppler done in the 1st trimester, in the 17-20 week of gestation and a blood estimates of these thiols would help recruit pregnant women who are prone to develop Preeclampsia.

**Ethical Approval**

Ethical approval was obtained from the Ethical committee of Osmania medical college as the study involved administering a drug. Written informed consent was taken from the enrolled participants in their own language prior to the enrolment of cases.

**Study design**

An interventional cohort study among pregnant women was conducted at the Institute of Obstetrics and Gynecology, Osmania Medical College, Government Maternity Hospital, Hyderabad and some referrals from the local practitioners in the old City of Hyderabad from August 2008 to December 2012. The participants included in the study was, Primigravidae women with the age group of 18-35 years. All the participants were explained about the study and written consent was taken from them. All the participants were grouped into three categories:
- Group 1: Normal Doppler
- Group 2: Abnormal Doppler with no L-Arginine supplementation
- Group 3: Abnormal Doppler with supplementation of L-Arginine at around the 17th week of pregnancy

All women in the Group 3 were given L-Arginine sachets of 3 gms/twice a day until delivery. All the cases received their regular supplementation of Iron, Calcium and Folic acid.

**Doppler Ultrasound Test**

All the patients underwent the doppler ultrasound of the uterine arteries. The equipment used was a GE Voluson 730 Expert doppler unit having a pulsed wave, continuous wave and HPRF Doppler with dual convex sector transducer. Doppler as a predictor for the development of preeclampsia was as high as 86.8 %. (13) Doppler Ultrasound of the uterine arteries was analyzed in all women at the 1st trimester of pregnancy (11-14 weeks) and between 17-22 weeks of pregnancy.
Thiols Estimation

All the participants were subjected to blood tests to analyze the level of plasma thiols i.e. Plasma Cysteine, Plasma Homocysteine, Plasma Cysteinyl Glycine, and Plasma Glutathione. Collected plasma samples were treated with N-butyl phosphine and incubated at 40°C/60 mins before precipitation with trichoroacetic acid and centrifuged for 10 mins to separate the proteins. The supernatant was incubated with borate, EDTA–sodium hydrochloride buffer and fluorescent 7-benzo-2-oxa-1,3-diazo-4 sulfonic acid solution at 60°C/60 mins. The solution was cooled at room temperature, filtered and injected into HPLC, Agilent 1100 series and fluorescence intensities were measured with excitation at 385 nm and emission at 515 nm. Agilent Chemstation software was used for the quantitation. Supelcosil 7m LC-18-DB HPLC column (150 mm x 4.6 mm) was used for the separation and an isocratic mobile phase of potassium dihydrogen phosphate buffer (10 mM, pH 2.1) containing 4% acetonitrile was used with a flow rate of 2.0 ml/min. This technique provides a reliable method for determination of plasma thiols where a simple chemical reduction transformed all the disulfides to thiols which are then derivatized and measured using HPLC fluorescence.

The blood levels were repeated in Group 3 after the 32nd week of gestation to form a Group 3b in order to see whether there was any statistically significant improvement in the blood levels. In addition to the tests all cases had a routine obstetric profile which includes complete blood picture, urine examination, Blood sugar, Thyroid profile, HIV and HBSAg. In cases with Preeclampsia, platelet count, renal and liver function tests with clotting profile were obtained. Women with severe preeclampsia were hospitalized and closely monitored.

Statistical Analysis

Descriptive statistics were calculated for all variables. Mean values across the groups were compared using ANOVA followed by post hoc test. Pre and post values were compared by paired “t”-test. Further to study the associations with categorical variables, Chi-square test was done. Level of significance was set as 0.05. SPSS version 19.0 was used for statistical analysis.

RESULTS

A total of 186 Primigravidae were recruited after scanning approximately 3800 women. All cases were monitored clinically throughout their pregnancy every 4 weeks up to 28th week and once in 2 weeks until 36th week and weekly thereafter. The Thiol values were analyzed and there was a statistically significant abnormal level in those cases that developed preeclampsia.

### Table 1: Mean values of Cysteine, Homocysteine, Cysteinyl glycine and glutathione in all the categorized groups (Group 1, 2, 3a, 3b).

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>Std deviation</th>
<th>Std error</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CYSTEINE</td>
<td>GROUP 1</td>
<td>50</td>
<td>54.5</td>
<td>15.4</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>50</td>
<td>114.2</td>
<td>24.1</td>
<td>3.4</td>
</tr>
<tr>
<td></td>
<td>3a</td>
<td>84</td>
<td>123.1</td>
<td>34.9</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>3b</td>
<td>60</td>
<td>93.3</td>
<td>20.8</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>GROUP 2</td>
<td>50</td>
<td>3.4</td>
<td>1.1</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>50</td>
<td>8.7</td>
<td>1.6</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>3a</td>
<td>84</td>
<td>8.4</td>
<td>2.2</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>3b</td>
<td>60</td>
<td>5.5</td>
<td>0.8</td>
<td>0.1</td>
</tr>
<tr>
<td>HOMOCYST.</td>
<td>GROUP 1</td>
<td>50</td>
<td>4.9</td>
<td>8.1</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>50</td>
<td>7.6</td>
<td>2.3</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>3a</td>
<td>84</td>
<td>8.2</td>
<td>1.9</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>3b</td>
<td>60</td>
<td>4.1</td>
<td>0.7</td>
<td>0.1</td>
</tr>
<tr>
<td>CYST gly.</td>
<td>GROUP 1</td>
<td>50</td>
<td>6.6</td>
<td>3.5</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>50</td>
<td>4.6</td>
<td>3.2</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>3a</td>
<td>84</td>
<td>4.7</td>
<td>7.9</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>3b</td>
<td>60</td>
<td>2.8</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>GTH</td>
<td>GROUP 1</td>
<td>50</td>
<td>6.6</td>
<td>3.5</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>50</td>
<td>4.6</td>
<td>3.2</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>3a</td>
<td>84</td>
<td>4.7</td>
<td>7.9</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>3b</td>
<td>60</td>
<td>2.8</td>
<td>1.0</td>
<td>0.1</td>
</tr>
</tbody>
</table>
As interpreted in the table 1, mean levels of cysteine were higher in the group 2 (114.2) and Group 3a (123.1), those groups may prone to preeclampsia. The mean values decreased after supplementation with L-Arginine in the group 3b (93.3) (p<0.001). Similar findings were seen with respect to homocysteine and cystenyl glycine. On the contrary the mean values of glutathione were lower in the Group 2 (4.6) and Group 3a (4.7) when compared to subjects with normal doppler (6.6) (p<0.001).

![Graph 1: Plasma serum cysteine levels in the categorized groups.](image1)

The levels of serum cysteine in graph 1 showed a mean of 54.58 µmol/L in Group 1 but elevated levels in Group 2 (114.25umol/L) & Group 3a (123.17umol/L) and a fall in Group 3b women (p value <0.001)

![Graph 2: Plasma homocysteine, cysteinyl glycine and glutathione levels in all the three groups.](image2)

As shown in the graph 2, the levels of homocysteine values in Group 1 (3.43 µmol/L) and Group 3b (3.56 µmol/L) were comparable and elevated levels of 8.70 µmol/L and 8.46 µmol/L in Group 2 and Group 3a respectively with the p value < 0.001. The levels of cystenyl glycine showed lower value of 4.97 µmol/L in Group 1 and 4.18 µmol/L in group 3b and elevated levels of 7.60 µmol/L and 8.22 µmol/L in Groups 2 and 3a respectively (p value <0.001). The mean values of
glutathione was 6.64 µmol/L in Group 1 and lowered levels of 4.62 µmol/L and 4.71 µmol/L in Group 2 and 3a and a mean of 2.61 µmol/L in Group 3b (p value <0.01).

The levels of cysteine, homocysteine, and cysteinyl glycine were increased in subjects with abnormal doppler (prone to preeclampsia) which further decreased to the normal level after the administration of L-Arginine (p<0.01). On the other hand glutathione levels dropped down in subjects with abnormal doppler (p<0.01).

Table 2: Levels of Thiols Before and After Supplementation

<table>
<thead>
<tr>
<th></th>
<th>Group 1 Normal Doppler</th>
<th>Group 2 Abnormal Doppler</th>
<th>Group 3 (Abnormal Doppler before supplementation)</th>
<th>Group 4 (After supplementation with Arginine)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cysteine (Normal level &lt;110 µmol/l)</td>
<td>100% (&lt;=110 µmol/l)</td>
<td>66% (&gt;110 µmol/l)</td>
<td>71.4% (&gt;110 µmol/l)</td>
<td>5% (&lt;=110 µmol/l)</td>
</tr>
<tr>
<td>Homocysteine (Normal level &lt;7 µmol/l)</td>
<td>100% (&lt;=7 µmol/l)</td>
<td>86% (&gt;7 µmol/l)</td>
<td>84.5% (&gt;7 µmol/l)</td>
<td>100% (&lt;=7 µmol/l)</td>
</tr>
<tr>
<td>Cysteinyl Glycine (Normal levels &lt;5 µmol/l)</td>
<td>80% (&lt;=5 µmol/l)</td>
<td>84% (&gt;5 µmol/l)</td>
<td>94% (&gt;5 µmol/l)</td>
<td>83.3% (&lt;7 µmol/l)</td>
</tr>
<tr>
<td>Glutathione (Normal levels &gt;4 µmol/l)</td>
<td>72% (&gt;4 µmol/l)</td>
<td>60% (&lt;=4 µmol/l)</td>
<td>71.4% (&lt;4 µmol/l)</td>
<td>25% (&gt;=4 µmol/l)</td>
</tr>
</tbody>
</table>

Levels of cysteine, homocysteine, cysteinyl glycine and glutathione were all within the normal range in subjects with normal doppler (Table 2). Increased levels were found in subjects with abnormal doppler which reverted back to normal after the administration with L-Arginine (p<0.01). With respect to glutathione the decreased values were found in subjects with abnormal doppler which increased back to normal range in about 25% of the subjects.

Routine and other blood tests were within the normal limits in Group 1, with mild abnormality in liver function test seen in 6 cases of Group 2 and Group 3 showed 4 cases of mild altered renal function tests.

DISCUSSION

This study assessed the level of plasma thiols in 186 pregnant women with normal and abnormal doppler. Further evaluation of the plasma level of thiols was done after the administration of L-Arginine in patients with abnormal doppler.

S Urmila et al (16) conducted a study on homocysteine association with preeclampsia and normotensive pregnancy. It was seen that normotensive pregnant women had a lower mean of 11.5 when compared to women with preeclampsia (14.5). This was in accordance with our study in which a lower mean of 3.4 was seen in normal doppler (normal pregnancy) versus abnormal doppler (preeclampsia) (8.7).

In the study conducted by Raijmakers et al (7) the preeclamptic women showed higher mean (13.1) concentrations of homocysteine than the women without preeclampsia (11.5). Similar trends were seen in the present study wherein women with abnormal doppler had a higher mean homocysteine concentration (8.7) than normal doppler’s (3.4).

The mean cysteinyl glycine values in women with preeclampsia (34) were higher than the normotensive women (37.5) in the study by Raijmakers et al. (7) The present study showed similar results with a higher mean of (7.6) in subjects with abnormal doppler to normal doppler (4.9) was seen.

The high concentration of homocysteine observed in preeclampsia could be attributed to decreased activity of one of the enzymes responsible for the remethylation of homocysteine or pathological process of haemoconcentration. (17)

These elevated levels of homocysteine would have lead to endothelial dysfunction, which eventually would have resulted in preeclampsia. (18,19)
The mean level of plasma glutathione was lower in subjects with abnormal doppler (4.6) than in normal doppler subjects (6.6) in this study. This significantly (p<0.001) low level of glutathione observed in subjects with abnormal doppler is in agreement with previous study done by Modupe Fisayo ASAOLO et al (15) where a higher mean glutathione level of (10.2) was seen in a normotensive pregnant women when compared to a hypertensive pregnant women (6.7).

HD Mistry et al (20) conducted a study to assess the glutathione activity in preeclamptic pregnancies. The results of his study revealed a highly significant reduction in plasma glutathione peroxidase activity in preeclamptic women when compared to controls which was very much in accordance with our study.

Previous reports given by JB Sharma et al (21) and S Kharb (22) found a similar trend of reduced glutathione level in pre eclamptic women which was very much in line with our study.

Depletion in the levels of glutathione has also found to be linked with lipid peroxidation, which occurs as a result of hypertension and thus the production of free radicals that cause endothelial damage. (17) The roles of glutathione in neutralizing free radicals is clearly evident from our findings since levels of glutathione were significantly higher in subjects with normal doppler than subjects with abnormal doppler. The decreased glutathione levels in subjects with abnormal doppler might be due to disturbances in the synthesis of glutathione in this condition. This indicates that glutathione might be a one of the contributory factor to hypertension in pregnancy. (17)

This study also evaluated the levels of thiols after the administration of L-Arginine a Nitric oxide donor. It was seen that the increased levels of thiols in subjects with abnormal doppler dropped down after the administration of L-Arginine which was statistically significant at p<0.05.

This study could not be compared with any other previous findings as this was one of the kinds of study that checked for the plasma levels of thiols after the administration of L-Arginine.

Jean Luc Balligand et al (23) in his paper discussion on Vitamin B or L-Arginine supplementation in hyperhomocysteinaemia elaborated that this could have been the possible reason. With respect to metabolism of homocysteine it can be re-methylated to methionine involving adenosyl intermediates. One of these methylation reactions involves the formation of asymmetric dimethyl-arginine (ADMA), an inhibitor of nitric oxide synthase. The inhibitory effect of ADMA can be competed away with excess L-Arginine, the natural substrate of nitric oxide synthase.

CONCLUSION

Present study revealed that subjects with normal doppler had all the oxidative stress parameters in the statistically normal range. Participants with abnormal uterine artery doppler have had abnormal level of oxidative stress parameters. Hence this altered level of oxidative stress parameters could be used as a marker to predict preeclampsia in pregnant women. Additionally L-Arginine supplementation in those with doppler abnormality showed up a reversal of the thiol values back to normal. This study gives further scope to research where L-Arginine supplements could be used to reduce the markers of oxidant stress and improve endothelial function.

ACKNOWLEDGMENT

The period of study took approximately 3 years to complete and the Biochemistry and Microbiology Department of the National Institute of Nutrition contributed immensely in analyzing the blood samples collected by me.

Conflict of Interest

All the authors declared that they have no conflict of interest.
REFERENCES
8. M Prakash, MS Shetty, P Tilak, N Anwar. Total Thiols: Biomedical Importance And Their Alteration In Various Disorders. OJHAS. 2009;8(2).

Evaluating the Dilemma of Organic Psychosis: A Case Report

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ABSTRACT

Mental and behavioral problems are known to result from brain dysfunction attributable to specific organic factor, and form the basis for organic psychosis. This entity includes disturbances of sensorium, cognitive impairments, psychotic symptoms, along with behavioral or personality changes which may be acquired after a period of typical development. Psychiatric symptoms may first bring such a person to medical attention, and may effectively overshadow the indicators of organicity. This is case report of a 45 years old male presented with socially withdrawn behavior, muttering to self and poor self-care with other significant findings suggestive of a diagnosis of organic Psychosis.

Highlights:
- Brain dysfunction secondary to an organic insult forms the basis of organic psychosis.
- Features of organic psychosis may include disturbances of sensorium, impairments of higher mental functions, psychotic symptoms as well as behavioral or personality changes.
- Literature has attributed encephalomalacia with increased risk of psychotic symptoms.
- Diagnosis may be compounded by a lack of significant past history and is frequently associated with poor prognostic outcome.

Keywords: Brain Dysfunction; Organic Mental Disorder; Hallucination; Psychoses.

INTRODUCTION

Mental and behavioral problems are known to result from brain dysfunction attributable to specific organic factor, and form the basis for the diagnosis of organic psychosis. This entity may include disturbances of sensorium, cognitive impairments as well as psychotic symptoms like delusions, hallucinations, mood and emotional disturbances along with behavioral or personality changes which may be acquired after a period of typical development. Encephalomalacia in particular, that reported in the periventricular as well as parietal regions of the brain, has been associated with an increased risk of psychoses. Previous studies including that of Holt et al found that lesions in the white matter of the parietal lobe disrupt fronto-parietal connectivity and might be responsible for the motor deficits as well as the social dysfunction and negative symptoms analogous to schizophrenia patients. This is in synchrony with the suggestions of Yildiz et al that structural and functional alterations might start in the parietal lobe and progress to the frontal regions in a small proportion of individuals with emerging schizophrenia.

CASE HISTORY

A 45 year old unmarried male, with no formal education, a tailor by occupation, currently not working for past 10 years, from rural background was brought to PGIMS Rohtak, Haryana, India by his brother with an illness insidious in onset and continuous in nature, characterized by not
going to work, inappropriate laughter, excessive smoking for 10 years along with decreased sleep, muttering to self and unprovoked aggression for past 1 year.

A change in the behavior of the patient was noticed when at his elder brother’s marriage, he started crying badly in the middle of the function for no apparent cause. He cried loudly for about 2 hours and all the attempts by the family members to console him went into vain. After the function was over, he did not sleep at night, appeared restless, roaming here and there in the house.

For next few days, he appeared irritable over trivial matters. He stopped going to his work and on being forced would get agitated. His sleep was also noticed to be decreased to 3-4 hours in the night, while he continued to smoke bidis and roam about in the house restlessly. At times, he was also noticed to have started laughing without any apparent reason.

At that time his appetite as well as self-care were normal.

He was taken to multiple faith healers but to no avail, following which he was taken to a private practitioner also but he refused to take medications prescribed. Gradually it was observed that his sleep improved without medications. He started doing some household/field work assigned to him under supervision like watering fields, getting animals. While his house was being constructed, he helped in construction work by taking material from one floor to the other.

Throughout the day, he would continue smoking bidis, one after the other and on being refused became irritable, his laughing continued along with gradual decline in self-care. As such he stopped brushing teeth, washing hands after going to toilet and upon being forced became abusive. As per family members, he had not taken bath for years now.

Since last 1 year, he is noticed to be talking to self in forms of questions and answers, following which would start singing songs, laughing loudly or hurling abuses for no apparent reason.

There was no history of seizure, head trauma, forgetfulness, suspiciousness, substance abuse. No history of low mood, suicidal ideas, hopelessness, worthlessness, helplessness was elicited.

Nothing suggestive of any contributory family history with birth and developmental history being normal. Patient remained unmarried initially owing to poor financial condition of the family and later on due to illness. There is history of bidi smoking for 30 years in dependence pattern. Pre-morbid personality was well adjusted. On GPE, power was reduced to 4/5 in left upper and lower limb.

On mental status examination patient was hard of hearing. Eye to eye contact was made but not maintained, rapport was not established. Speech only in response to question and his affect was inappropriate. Formal thought disorder could be elicited as derailment. Patient categorically denied hallucinations.

His attention was not found to be sustained on higher mental function assessment.

Upon MMSE his score was obtained as 13, suggestive of severe cognitive dysfunction. MRI suggested periventricular as well as right fronto-parieto-temporal encephalomalacia with gliosis along with other chronic ischaemic changes also. His serum vitamin B₁₂ level was low and was started on injectable vitamin B₁₂ in accordance with the recommendation of the neurologist.

Based on history, clinical assessment, GPE, cognitive assessment as well as radiological findings along with the opinion of the neurologist, a diagnosis of “organic psychosis” was kept. Patient was admitted and started on Tab Risperidone 2 mg, Tab Clonazepam 1 mg in divided doses, with dose of anti-psychotic medication being adjusted as and when required. He showed gradual improvement in response to medications and his muttering to self and self-care improved significantly.
DISCUSSION
The literature points towards inflammatory and infectious conditions being involved in the development of encephalomalacia, which although were not appreciable in the history of the index patient but the insult to brain tissues was evident in the findings of the MRI.

The fronto-parietal cortex is involved in various neuropsychological functions that are impaired in schizophrenia patients, such as the social functioning, senses, cognitive and executive function, and self-awareness.[6,7]

Literature suggests that individuals with such an extensive lesion in the brain have a poorer outcome or are difficult to treat. Moreover, they have been difficult to diagnose in terms of given history and observed symptoms. Hence, this case report is unique as the index case has a rather satisfactory outcome with treatment.

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REFERENCES


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Evaluating the Consumption of Non-Home Prepared Food in Anambra State, Nigeria

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ABSTRACT

This study examines the consumption of non-home prepared food in Anambra State, Nigeria. The objectives of the study is to assess the determinants of consumption of non-home prepared food in Anambra State and to ascertain the economic importance of non home prepared food in Anambra State. Primary source of that collection was employed in this study through administration of a well structured Questionnaire. The statistical tools used in this study include the frequency distribution, percentage distribution, descriptive analysis and Chi-square analysis. The findings of this study that sex, age, marital status, occupation, and average monthly income has significant impact on patronage of non-home prepared food. It was found that more males patronize non-home prepared food than females. Also, findings showed that as the age grade increases patronage of non-home prepared food decreases. It was found that single respondents often patronize non-home prepared food than married respondents. Further findings showed that non salary earners equally patronize non-home prepared food than salary earners. Also, findings showed that respondents with less than 10000 average monthly income patronize non-home prepared food mostly followed by respondents with 10000 to 19000 average monthly income. This result indicates that as average monthly income increases, patronage of non-home prepared food decreases. However, findings revealed that non-home prepared food does not significantly impact on the economy of Anambra State.

Keywords: Age, Food, Monthly Income, Occupation, Sex, Patronage.

1. INTRODUCTION

Due to the sensitivity of the issue of food consumption, it has been a subject of research interest all over the world, especially meaningful in developing countries where food expenditures contributes to relatively large share of household income. Studies of food consumption cuts across food-related nutritional policies and many others. In such situations, estimates of how food consumption is affected by changes in prices, income, and taxation policies are usually provided (Dunne and Edkins, 2005).

Food consumption in Nigeria has been an important issue, not only because it is related to poverty and food security, but because it is highly associated with living standards and household resource. Essentially, the demand for food depends on population and the dietary habits/per capita daily calorie intake of the people under consideration. On the other hand, the food requirement of the nation is dependent on an additional factors such as food import and export balance. Some researchers believe that on the national level, per-capita growth of production of major foods in Nigeria has not been sufficient to satisfy the demands of an increasing population (Kormawa, 1999). This implies the existence of a wide gap between national supply and national demand for food. Household food consumption pattern in Nigeria has been changing over the last few years. There has been an increase in the consumption of carbohydrate foods like yam, cassava, maize and rice and some decrease in the...
consumption of such food items as fish, fresh fruits, as well as fresh and processed vegetables.

Akinyele (2009) argued that the problem of food and nutrition security in Nigeria has not been adequately and critically analyzed, despite various approaches addressing the challenge. He noted that the enormous amount of money spent in attempting to ensure the food security of Nigerians without success calls for a fundamental review of the past approaches and achievements to see what lessons can be learned to re-strategize and to develop an approach that will ensure that better progress is made toward achieving the first Millennium Development Goal. Since the majority of Nigerians (70 percent) live in rural areas, an analysis of the food and nutrition security status of rural dwellers will provide a clear picture of what needs to be done to ensure food security in Nigeria with the attendant improvements in nutrition status when all the other necessary conditions, such as adequate health and care, are present. However, one of the most remarkable social changes in Nigeria since the turn of this century has been the rapid rate of urbanization. However, the major consequence of this has been the creation of a number of social, environmental and economic problems. The most critical among the social problems has been the inability of the country to provide adequate housing especially for average Nigerians. In this view, the constant attempt by both the public and private developers to solve the housing problems leads to the sub-urban residential developers in major cities. The resultant effect of this is reflected in the very wide separation between the places of residence and those of work and schools. This coupled with long hours at work or school and the insufficient or inadequate transportation system, most Nigerians had to rely on the consumption of foods prepared outside the home.

The purpose of this study is to evaluate the various determinants of non-home prepared food in Anambra State-Nigeria with the specific objective to: assess the determinants of consumption of non-home prepared food in Anambra State, and ascertain the economic importance of non home prepared food in Anambra State

2.0 LITERATURE REVIEW

Food security as defined by FAO (Food and Agriculture Organization) (1999) refers to the condition in which all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

Akinyele (2009) opined that the accessibility of food has three components which comprises of physical access to food, economic access to food, and sustainable access to food. He explained further that availability of food, stability of food supplies and access are therefore three essential determinants of food security. Physical access implies food availability or food supply to the household, as there might be food available at the national level which however may not trickle down to the household level.

Speaking on the economic importance of non-home prepared foods, Tinker and Fruge (1982) opined that most street food enterprises are single person or household-based. They explained that past studies has revealed that most vendors owned only one stall or cart (only 12 per cent owned two and very few more than two), and most received assistance, either from family members (45 percent), paid workers (8 percent) or both (19 percent). However, it is important to observe that the street food trade is both retail and a productive activity: although the sale of street foods is the most visible part of the trade, most street foods have been processed to some extent, much of which may have occurred unseen off-street. In addition, the extent to which foods are processed, and by whom, varies; some street food vendors also provide an outlet for foods processed by others in the informal sector, and also, in
some countries, for small- and large-scale food processing industries in the formal sector.

Bueno (1988) speaking on cost and availability of non-home prepared foods, noted that one of the common prejudices held against street foods is that they are less nutritious and more costly than foods prepared at home. Also, due to the sometimes high costs of fuel and ingredients in urban contexts, economies of scale can create a street food cheaper than the same food prepared at home. Broader economic factors can also affect the cost of street foods relative to home-prepared foods; in most developing nations the effect of economic recession led to an increased consumption of street foods because of the scarcity and high cost of obtaining ingredients. He equally noted that a rise in consumption of street foods following the implementation of structural adjustment programs including currency devaluation in countries like Nigeria.

Stewart et al. (2004) on the contributions of environmental and societal changes on the increasing demand of away from home prepared food, explained that there has been an increase in the consumption of away-from-home food in countries like the United States and equally developing nations across the world. As depicted form the result of their study, they found that in United States the percentage of the food budget spent on away-from home food has steadily increased since the mid-1970s. Consequently, the proportion of calories provided by away-from-home food has increased in recent decades. In 1995, it accounted for 34% of total energy intake, an increase from 18% in 1977–1978. A variety of factors may be contributing to the increased consumption of away-from-home food. The total number of foodservice establishments in the United States has almost doubled in the last three decades, increasing from 491,000 in 1972 to 878,000 in 2004. Furthermore, changes in the workforce, including a rise in dual-income households and women working outside the

home have coincided with the demand for take-out meals and convenience in food preparation. Regardless these causes aforementioned, they noted that away-from-home food is and will continue to be an important part of the U. S. diet.

Igbokwe (2005) opined that fast food business in Nigeria over the years has been on an increasing demand. He noted that the business keeps expanding and gaining new outlets and many Nigerians have either established or are planning to establish a fast food business as source of livelihood. The author argued that most companies and individuals who are in the fast food business may have realized the place of food as one of the basic necessities of man and the business will become a goldmine if well managed.

Reit et al.(2003) in their study evaluated the determinants of non-home-prepared food consumption in two low-income areas in Nairobi. The survey included 241 men and 254 women using a structured questionnaire to obtain data on demographic and socioeconomic factors. The findings of the study revealed that for women in the slum area, the presence of school-age children and distance to work were determinants of non-home-prepared food consumption, whereas employment status and distance to work were determinants for men in the slum area. Having their own income and, for those employed, employment status were determinants for women in the low- to middle-income area, whereas socioeconomic status was the determinant for the men.

Findings from Aromolaran (2004) showed that the negative effect of women’s income share on calorie intake of household members cannot be said to be due to a higher cost of obtaining same quantity/quality of food from women’s predominantly off-farm income and men’s predominantly farm income (called transaction cost). Equally, observed was that the estimated negative effect of increasing women’s share of income on calorie intake
is not the consequence of reallocation of women’s income from low quality/high calorie foods to high quality/low calorie foods. Further findings from the study support the fact that calorie intake increases in household income is small and close to zero. This implies that income policies may not be the most effective way to achieve substantial improvements in calorie intake levels. Also, it was found that increases in women’s share of household income are likely to result in marginal declines in food calorie intake by individual household members. This assertion does not in any way support the general thinking that intra-household resource reallocation from men to women would increase food energy intake. Rather it would imply that food calorie intake by household members is enhanced with more income in the hands of men relative to women.

3. MATERIALS AND METHODS

3.1 Research Design and Sample Population

The study adopted the use of survey design method in the conduct of this study. The choice of the survey design was to enable the researcher gather a wide range of relevant data adequate for proving inference for the study. In this study, 400 respondents were randomly selected in Awka the capital of Anambra State between the period July 2018 to December 2018. Awka capital comprises of the following towns: Awka, Nibo, Amawbia, Nise, Umuawulu, Mbaukwu and Isiagwu.

3.2 Method of Data Analysis

The statistical tools used in this study include the frequency distribution, percentage distribution, descriptive analysis, Kruskal Wallis Analysis, and Chi-square analysis. The choice of these tools is to enable the researcher obtain adequate inference on the various objectives of the study.

The respondents comprises of 35% of males and 65% females, respondents 72.5% are single while 27.5% are married, 12.5% are within age group 0-19 years, 77.5% are within age group 20-39 years, 10.0% are within 40-59 years while 0.0% are >59 years. It was also found that 15.0% have no formal education, 2.5% have primary education, 10.0% have secondary education, 72.5% have tertiary education. It was observed that 40.0% are salary earners while 60.0% are non salary earners. The analysis showed the distribution of house size to be 22.5% have 1-3 household size, 55.0% have 4-6 household size, 12.5% have 7-9 household size and 10.0% have >13 household size. It was observed that 42.5% of the respondents earn on the average <10000 naira, 25.0% earn 10000 - 19000, 7.5% earn 20000-39000 and 25.0% ear >40000.

4. DATA ANALYSIS AND DISCUSSION

Table 1: Summary of Demographic response of the respondents

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency (%)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEMALE</td>
<td>260 (65.0)</td>
<td>65.0</td>
</tr>
<tr>
<td>MALE</td>
<td>140 (35.0)</td>
<td>35.0</td>
</tr>
<tr>
<td>AGE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-19</td>
<td>50 (12.5)</td>
<td>12.5</td>
</tr>
<tr>
<td>20-39</td>
<td>310 (77.5)</td>
<td>77.5</td>
</tr>
<tr>
<td>40-59</td>
<td>40 (10.0)</td>
<td>10.0</td>
</tr>
<tr>
<td>&gt;59</td>
<td>0 (0.0)</td>
<td>0.0</td>
</tr>
<tr>
<td>MARITAL STATUS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SINGLE</td>
<td>290 (72.5)</td>
<td>72.5</td>
</tr>
<tr>
<td>MARRIED</td>
<td>110 (27.5)</td>
<td>27.5</td>
</tr>
<tr>
<td>EDUCATIONAL QUALIFICATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO FORMAL EDUCATION</td>
<td>60 (15.0)</td>
<td>15.0</td>
</tr>
<tr>
<td>PRIMARY</td>
<td>10 (2.5)</td>
<td>2.5</td>
</tr>
<tr>
<td>SECONDARY</td>
<td>40 (10.0)</td>
<td>10.0</td>
</tr>
<tr>
<td>TERTIARY</td>
<td>290 (72.5)</td>
<td>72.5</td>
</tr>
</tbody>
</table>

4.1 Chi-square analysis on the effect of sex on patronage of non-home prepared food

H₀₀: Sex has no significant effect on patronage of non-home prepared food

Table 2: Result of Chi-Square analysis on the effect of sex on patronage of non-home prepared food

<table>
<thead>
<tr>
<th>value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>4.396</td>
<td>.036</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>400</td>
<td></td>
</tr>
</tbody>
</table>
The result obtained in table 2 found a Chi-square value of 4.40 and a p-value of 0.04 which falls on the rejection region of the hypothesis assuming a 95% confidence level. This result implies that sex has significant effect on patronage of non-home prepared food. Also, result presented in figure 1 showed that more males patronize non-home prepared food than females.

### 4.2 Analysis on the effect of Age grade on patronage of non-home prepared food

**H$_{01}$**: Age has no significant effect on patronage of non-home prepared food

<table>
<thead>
<tr>
<th>Table 3: Result of Chi-Square Analysis on the effect of Age grade on patronage of non-home prepared food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
</tr>
<tr>
<td>N of Valid Cases</td>
</tr>
</tbody>
</table>

The result of the analysis obtained in table 3 found a Chi-square value of 91.03 and a p-value of 0.00 which falls on the rejection region of the hypothesis assuming a 95% confidence level. This result implies that age has significant effect on patronage of non-home prepared food. Also, it was obtained in figure 2 that as the age grade increases patronage of non-home prepared food decreases.

### 4.3 Analysis on the impact of Marital Status on patronage of non-home prepared food

**H$_{02}$**: Marital Status has no significant impact on patronage of non-home prepared food

<table>
<thead>
<tr>
<th>Table 4: Result of Chi-square analysis on the impact of Marital Status on patronage of non-home prepared food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
</tr>
<tr>
<td>N of Valid Cases</td>
</tr>
</tbody>
</table>

The result of the analysis obtained in table 4 found a Chi-square value of 25.39 and a p-value of 0.00 which falls on the rejection region of the hypothesis assuming a 95% confidence level. This result implies that marital status has significant effect on patronage of non-home prepared food. Also, it was found in figure 3 that single respondents patronize non-home prepared food than married respondents.

### 4.4 Analysis on the effect of Age grade on patronage of non-home prepared food
H03: Occupation has no significant effect on patronage of non-home prepared food

Table 5: Result of Chi-square Analysis on the effect of Age grade on patronage of non-home prepared food

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>21.094</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>400</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 4: Distribution of responses on patronage of non-home prepared food by occupation

The result of the analysis obtained in table 5 found a Chi-square value of 21.09 and a p-value of 0.00 which falls on the rejection region of the hypothesis assuming a 95% confidence level. This result implies that occupation has significant impact on patronage of non-home prepared food. Also, the result presented in figure 4 showed that non salary earners patronize non-home prepared food more than salary earners.

4.5 Analysis on the effect of average monthly income on patronage of non-home prepared food

H04: Average monthly income has no significant effect on patronage of non-home prepared food

Table 6: Result of Chi-square Analysis on the effect of average monthly income on patronage of non-home prepared food

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>49.510</td>
<td>3</td>
<td>.000</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>400</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 5: Distribution of responses on patronage of non-home prepared food by average monthly income

The result of the analysis obtained in table 6 found a Chi-square value of 49.51 and a p-value of 0.00 which falls on the rejection region of the hypothesis assuming a 95% confidence level.

4.6 Kruskal-Wallis Test on whether non-home prepared food has positive impact on the economy

H05: Non-home prepared food has no positive impact on the economy

Table 7: Test Statistics Result on whether non-home prepared food has positive impact on the economy

<table>
<thead>
<tr>
<th></th>
<th>Response on economic importance of non-home prepared food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>7.250</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.123</td>
</tr>
<tr>
<td>a. Kruskal Wallis Test</td>
<td>133</td>
</tr>
<tr>
<td>b. Grouping Variable: Option</td>
<td></td>
</tr>
</tbody>
</table>

The result of the analysis obtained in table 7 found a Chi-square value of 7.25 and a p-value of 0.12 which falls on the acceptance region of the hypothesis assuming a 95% confidence level. This result implies that non-home prepared food has no positive impact on the economy of Anambra State.

5. CONCLUSION

This study examines the consumption of non-home prepared food in
Anambra State, Nigeria. Food choices can differ with regards to some certain factors such as sex, age, cultural food consumption pattern and settlements.

The findings of this study that sex, age, marital status, occupation, and average monthly income has significant impact on patronage of non-home prepared food. It was found that more males patronize non-home prepared food than females. Also, findings showed that as the age grade increases patronage of non-home prepared food decreases. It was found that single respondents often patronize non-home prepared food than married respondents. Further findings showed that non-salary earners equally patronize non-home prepared food than salary earners.

Also, findings showed that respondents with less than 10000 average monthly income patronize non-home prepared food mostly followed by respondents with 10000 to 19000 average monthly income. This result indicates that as average monthly income increases, patronage of non-home prepared food decreases. However, findings revealed that non-home prepared food does not significantly impact on the economy of Anambra State. This could be attributed to the quality of non-home prepared food sold in Anambra State which might not be satisfactory people who are mostly civil servants.

REFERENCES


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Knowledge, Attitude and Practice Study Regarding Dengue among Rural Communities in Chitradurga City

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ABSTRACT

Background: Dengue fever is one of the major mosquito-borne diseases caused by dengue virus through the bite of female Aedes mosquito.

Objectives: To assess the knowledge, attitude and practices regarding dengue fever among rural communities.

Methodology: A prospective interventional study was carried out for a period of six months. The study was carried out in selected areas of Chitradurga.

Results: A total 405 subjects were participated in to the study, among them 196 were males and 209 were females. Most of the subjects had source of information about dengue through all the above (health department, newspaper, friends, TV/radio) (29.3%). Also they got information from health department staff (26.4%), newspaper (15.8%), friends (14.3%), television/radio (14%). Almost all subjects said dengue is preventable and communicable.

Conclusion: It is concluded that selected areas of Chitradurga population were having good knowledge regarding prevention of dengue fever. Therefore, there is need for further information, education and communication programs prevention of dengue fever and this achieved by organizing health education campaigns in community.

Key words: Dengue fever, cross sectional, KAP, selected areas.

INTRODUCTION

Dengue fever (DF) is a mosquito-borne viral infection causing a severe flu-like illness and, sometimes causing a potentially lethal complication called severe dengue transmitted by bites of Aedes aegypti and Aedes albopictus mosquito. Dengue fever (DF) is caused by any of four closely related viruses, or serotypes: (DENV 1, DENV 2, DENV 3, DENV 4). Symptoms of infection characterized by a sudden onset of high fever (103-106°F), severe headache, backache, intense pain in joints and muscles, retro-orbital pain, nausea and vomiting and a generalized erythematous rash that usually begin 4-7 days after the mosquito bite and typically last 3 - 10 days. [1] India emerges in the analysis as the country with the world’s highest dengue burden, with about 34% of all such cases occurring here. [3] Dengue fever or dengue haemorrhagic fever with plasma leakage that may lead to hypovolemic shock and dengue shock syndrome. The illness often begins with a sudden rise in temperature accompanied by facial flush and other flu-like symptoms. There is no specific treatment for dengue, but appropriate medical care frequently saves the lives of patients with the more serious dengue hemorrhagic fever. [5] The rapid increase in human population, lack of awareness among people, environmental changes, social changes and increased breeding of vector mosquitoes resulted in increased dengue transmission. Water storage drums, flower vases, cement tanks, plastic and metal drums, tyres, bottles, tin cans, coconut shells and other such discarded containers which can hold rainwater, overhead tanks, ground water storage tank, etc. are the source of breeding of Aedes mosquitoes. [3] Dengue vector control requires effective participation of the local community.
Although education campaigns have increased people’s awareness of dengue, it remains unclear to what extent this knowledge is put into practice, and to what extent this practice actually reduces mosquito populations. [4] People have inadequate knowledge about dengue and its preventive methods. They need more understanding of dengue fever. There is a need to make rural people aware of different preventive practices and reduce knowledge application gap. There is a need for information, education and communication programmes to combat problems related to this disease. [6]

From the above facts it is clear that awareness regarding dengue is necessary to our society. Hence we are planning to conduct a study on “Knowledge, Attitude and Practices regarding Dengue among Rural Communities in Chitradurga City”

MATERIALS AND METHODS

Study design: A Community Based Prospective Interventional study.
Study site: The study will be conducted in selected areas of Chitradurga.
Study period: The study was conducted over a period of six months from 2017 to 2018.
Study subjects: All people of selected area of Chitradurga of both genders.
Inclusion criteria:
- Subjects of age group 18-65 years of both the genders
- Selected villages of Chitradurga city.
Exclusion criteria:
- Subjects who are not willing to give inform consent form.
Ethical approval:
The study was approved by the Institutional Ethical Committee of Basaveshwara Medical College Hospital& Research Centre, Chitradurga.

Sources of data:
- Demographics of study subjects
- Interview with the study subjects.

Study procedure:

- The study was conducted in selected areas of Chitradurga, after taking the ethical clearance from institutional ethics committee. After obtaining the informed consent. Firstly, the study subjects will be given a questionnaire and the answers will be collected and evaluated, which will be the pre-test. After pre-test, verbal education along with patient information leaflets. After a gap of fifteen days, post-test will be conducted on the same study subjects with the same questionnaire to be filled, after which it will be evaluated.
- The questionnaire will be scoring type with multiple choice questions. Each correct answer will be awarded one mark, whereas each wrong answer will be given zero marks.

All these results are analysed by using Microsoft excel 2013 and paired T test to compare the collected data from different selected areas of Chitradurga. P<00.5 will be considered as significant value.

RESULTS

Total no of 421 subjects were enrolled in the study of 1st visit, out of which only 405 subjects were present in the 2nd visit. Hence we have selected the data of 405 subjects for further study analysis and remaining 16 subjects were excluded from the study.

A self prepared questionnaire is used for taking data. Some are

1) **What is dengue?**
   - a) Bacterial infection
   - b) Fungal infection
   - c) Viral infection
   - d) Protozoa infection

2) **Which mosquito causes dengue?**
   - a) Male
   - b) Female
   - c) Both
   - d) Don’t know

3) **Which blood cells affected by dengue?**
   - a) Platelet
   - b) Red blood cells
c) Both  
d) Don’t know  

4) At what time dengue mosquito mostly bite?  
a) During dusk  
b) During dawn  
c) During night  
d) None of the above  

5) How do you prevent mosquito bite?  
a) Using mosquito repellents and coils  
b) Applying anti mosquito creams  
c) Using full sleeved cloths and bed nets  
d) All the above  

6) How you know about dengue?  
a) Television/radio  
b) Newspaper  
c) Friends  
d) Health department staff  
e) All the above  

Distribution of the subjects according to gender  
Almost 405 subjects were enrolled during the study period. Among them 196(48.3%) were males and 209(51.6%) were females as shown in fig 1  

![Fig 1: Distribution of Subjects according to Gender.](image)

Distribution of the subjects according to age wise allotment of score  
Significant distribution in the age wise distribution of marks during post test in the subjects aged 18-65years and was more significant as shown in fig 2  

![Figure 2: Distribution of the subjects according to age wise allotment of score](image)

Response for what type of infection is dengue  
a) Bacterial infection  
b) Fungal infection  
c) Viral infection  
d) Protozoa infection  
About 98 subjects had responded for correct answer in pre test which was increased to 313 during post test showed in fig 3  

![Figure 3: Response for what type of infection is dengue](image)

Distribution of the subjects according to the source of the information  
The distribution of subjects based on source of information, most of the subjects had source of information about dengue through all the above (health department, newspaper, friends, TV/radio) 119(29.3%) followed by health department staff 107(26.4%), newspaper 64(15.8%), friends 58(14.3%),
television/radio 57(14%) as shown in table no 13 and figure no 14.

Figure no 4 Distribution of the students according to the source of information

Response for the prevention of mosquito bite
a) Using mosquito repellents and coils
b) Applying anti mosquito creams
c) Using full sleeved cloths and bed nets
d) All the above
About 127 subjects had responded in pre test and in post test 329 subjects as shown in fig no 5

Figure no 5 Response for the prevention of mosquito bite

DISCUSSION
The study was conducted to improve the knowledge in different aspects of dengue fever among subjects through the awareness by using means of KAP method. It was carried out among selected areas of Chitradurga city and the observed a statistically significant change in the level of knowledge and practice on dengue fever among the selected subjects.

Total 405 subjects participated in the study, in that 196 males and 209 females. In this study it is shown that there is improvement in the post test. In pre test (2.14) and increased to 8.85 in post test. 21-30 years of subjects are having better knowledge when compared to other age group. According to source of information television (14.0%), newspaper (15.8%), friends (14.3%), health department (25.7%), all the above (29.3%).

Out of a total of 400 respondents, there were equal number of males and females. Majority of the respondents were in the age group 31-40 years and the percentage of >50 years respondents in the study sample were nearly 25%. Regarding the source of information on dengue fever (Table 4), 47.5% respondents came to know about dengue fever through neighbors, 36.5% through TV/ radio, 7.6% through newspapers, 7.6% through health workers and 0.8% through mass meetings. [2]

A total of six hundred forty six (646) respondents were recruited to participate in the investigation consisting of 319 (49.38%) male and 327 (50.62%) female. Majority of the respondents belong to the age group of 18 to 23 years old (n = 394, 60.99%) and not married (n = 458, 70.89%) sources of information about dengue. Majority of the respondents or 73.37% cited Television/Radio as the main source of information on dengue infections. In addition, few participants obtained such information from health workers and schools. [7]

800 respondents are involved in the study. The sample area was the two rural (villages) and two slums of the city. Each 200 respondents from each village and slum area. Results showed that knowledge and awareness about dengue fever was generally inadequate. It was more in rural (48.5%) as compared to slum (30%). Only 72.62% of the respondents answered that mosquito was responsible for the transmission of dengue. They had insufficient knowledge that
dengue mosquito bites at day time and breeds in clean water. Most important role seemed to be played media including television and radio. In the our study, health professional and television/radio was the most important source of information. Further, it was found that the role of health personnel in creating awareness in respect to DF was satisfactory as 44.87% of those who were aware, got the relevant information from health staff. [4]

Out of 235 participants, a total of 223 responded to the questionnaire giving a response rate of 95%. Table 1 depicts the socio-demographic details of the study subjects. The study showed that the age of the respondents (n=223) varied from 20 to 89 years (Mean- 42 yrs, SD- 14.3 yrs). Most (35%) of the participants were in the age group 31-40 years. There were 134 males and 89 females giving a male to female sex ratio of 1.5:1. Only 8.1% of study participants were illiterate. According to socio-economic status, 13.9% of participants were from upper class while 18.4% were from lower classes 2 presents findings on sources of information on DF. The majority of the research participants reported that they had heard of DF through the TV/ Radio (84%) followed by newspaper (42%). [5]

Among 204 students of Alam Shah Science School, Cheras/Kuala Lumpur. Study design was a cross sectional study followed by an interventional (pre-post) Study. The self-administered questionnaire included questions on socio-demographic factors, knowledge, attitude and practice regarding dengue fever. Majority of respondents were Malays (96.6%), monthly family income more than RM 3000 (64.6%) and lives in urban area (64.6%). There was no significant association between knowledge status and socio-demographic factors (p-value>0.05). Most of the respondents had good knowledge (63.2%) good attitudes (79.9%) regarding dengue fever. However, practices to prevent dengue were poor (74.0%). Only about one-fifth of the respondents (18.2%) believed that dengue fever is a flu-like illness. Knowledge score was significantly increased after health education programme (p value <0.001). There is a need to increase health education activities through campaigns and mass media to increase knowledge regarding dengue fever.

CONCLUSION

A significant number of subjects had poor knowledge about dengue fever. It was concluded that more than half of the subjects had average knowledge in the pre test, after the intervention it was increased in the post test.

The subjects had improved the knowledge about dengue fever. In the absence of an effective vaccine for dengue fever, the prevention and control of the disease mainly depends upon the epidemiological surveillance and implementation of effective vector control measure. The main sources of information are newspaper, friends, radio and television. Therefore, there is a further need to provide information, education and communication programs which can be achieved by organizing health education campaigns in community involving areas.

Hence health education programs should not only focus on providing knowledge and also creating awareness. So the research felt awareness programs regarding dengue fever and its prevention should be needed.

ACKNOWLEDGEMENT

It is a pleasure and privilege to express my deep sense of thanks and indebtedness to the management of SJM College of Pharmacy Karnataka, Mr. Nataraj G.R, Assistant Professor, Department of Pharmacology and Dr. Bharathi D.R, Principal SJM College of Pharmacy for giving the consent and facilities to carry out this work.

REFERENCES

1. Yboa BC, MAN, RN, Labrague LJ, MAN, RN. Dengue knowledge and preventive practices among rural residents in Samar
7. Dr. Afzal U, Dr. Abbas SA , Dr. Iqbal H , Dr. Ahsen NF. Comparison of knowledge & practices regarding dengue infection in medical students a pre and post intervention study in the City of Lahore. Professional Med J 2014; 21(4):697-700.


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The Factors Influencing Defecation Behavior in Toilet Pasca Community Led Total Sanitation at Wamesa Sub District Manokwari Selatan District

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ABSTRACT

Background: Community-based total sanitation is a new approach and paradigm of sanitation development, among others, changing defecation behavior in latrines, but found various factors of defecation behavior in latrines including education, knowledge, attitudes, officer roles, government roles, cadre roles and community participation.

Objective: To find out the factors that influence defecation behavior in community led total sanitation of Wamesa Village, South Manokwari District after Community Led Total Sanitation

Research Method: Analytical with cross sectional study design. The population is the entire community in Wamesa Village, South Manokwari District, Manokwari Regency in September - October of 2018 and population is chief of family as much 73 family and samples is 73 people (total population). Data approach using a questionnaire and analyzed using chi square test and logistic binary regression.

Results: Factors that influence the defecation behavior in after community led total sanitation in Wamesa Village, South Manokwari District are knowledge (p-value 0.014; RP = 2.496; CI95% (1.280-4.867), attitudes (p-value 0.010; RP = 2.605; CI95% (1.389 - 4.888), the role of health workers (p-value 0.000; RP = 3.445; CI95% (1.809 - 6.561), the role of government (p-value 0.000; RP = 4.421; CI95% (2.298 - 8.504 ), the role of cadres (p-value 0.000; RP = 4.643; CI95% (2.323 - 9.279) and community participation (p-value 0.000; RP = 7.350; CI95% (3.104-17.406), while factors that do not influence CHAPTER in the toilet for the community after the community led total sanitation in Wamesa Village, South Manokwari District was education (p-value 0.220; Rp. 1.666; CI95% (0.842 - 3.290). The dominant factors that affected BAB behavior in the community after community led total sanitation in Wamesa Village South Manokwari District is participation and knowledge.

Keywords: Behavior, Defecation, Toilet, After Community Led Total Sanitation

1. INTRODUCTION

Joint commitment from the National to the Regional or District / City level towards sanitation problems can be seen from the results of National sanitation access, for the achievement of National level Open Defecation Village (SBS) until the second quarter of 2018 is only 25.04%, while access to sanitation has reached 72.62% (stbm-indonesia.org). For West Papua Province the achievement of stopping open defecation (SBS) until the second quarter of 2018 has only reached 8.75% and 24 sanitation access, 89% (stbm-indonesia.org).

Achievement of sanitation access in Manokwari District until the second quarter of 2018 was highest in the Prafi District, which amounted to 99.69% and the lowest access to sanitation was in the Masni District, which amounted to 77.74% (stbm.indonesia.org). Masni District is one of the districts with the lowest access, and there are still some people who have been triggered by STBM but still defecate not in latrines but by places. In contrast to the people in the South Manokwari District, after the STBM triggering, there was a significant increase in access. Increased
access to sanitation after STBM triggering in the South Manokwari District is an increase of 73.46%, and if seen at the Kelurahan / Kampung level it turns out that the highest increase in access is in Wamesa village which is an increase of 91.78% (stm.indonesia.org)

Based on the Manokwari District Health Office (Environmental Health Section), that in Wamesa Village before the STBM triggering was conducted, there were only 6 (six) families that had family latrines from 58 families (10.34%) (Health Office Health Report, 2008). Based on the information that we obtained from Maripi Health Center, that in Wamesa Village there are frequent cases of diarrhea every year, there are even 2 (two) people who died in 2007 due to diarrhea, one adult and one toddler. (Maripi Health Center Annual Report, 2007). The triggering of STBM in Wamesa Village was conducted in 2009, with a source of funds from Unicef through the Water Environment and Sanitation (WES) program.

The reason Kampung Wamesa was chosen as the location of the study was because in Wamesa village only a behavior change triggering was carried out, not accompanied by the construction of supporting facilities in this case the construction of drinking water and toilet facilities, but behavior changes occurred more specifically defecation behavior, which usually defecated carelessly become a bowel movement in the toilet. This is evidenced by statements from the entire community, they made a declaration of stopping open defecation in 2011.

Referring to the background above, the authors are interested in seeing "Factors Affecting Defecation Behavior in Latrines After the triggering of Community Based Total Sanitation (STBM) in Wamesa Village, South Manokwari District".

2. MATERIALS AND METHODS
2.1. Research Design
This type of research is descriptive analytic which is also interpreted as research that draws conclusions through testing hypotheses to generalize the results (Notoatmodjo, 2012; Sulistyaningsih, 2011). The research approach used in this study is cross sectional, namely research that aims to measure the dependent variable and independent variables simultaneously, so that the relationship between the two variables is obtained (Chandra, 2005). In this study, measurements were taken on the dependent variable, defecation behavior in the post-triggering toilet and independent variables, namely education, knowledge, attitudes, the role of health workers, the role of government, the role of cadres and community participation.

2.2. Location and Time of Research
a. Research Location
This research was conducted in Wamesa Village, South Manokwari District, Manokwari Regency, West Papua Province.
b. Research Time
The study was conducted in September - October in 2018
c. Population
Population is the whole object or object under study, Sugiyono (2013). The population in this study were all family heads in Wamesa village as many as 73 families.
d. Samples
The sample is a portion of the population that is considered representative of the population, but if the population is less than 100, the sample in this study is the total population (Arikunto, 2008) with the following sample criteria:
Inclusion Criteria
1) Father, if the family consists of father, mother and child.
2) Mother, if in the family the status of a widow or father is difficult to find because of working outside the village.
3) Family members who are willing to become respondents (age ≤20 years)

Exclusion Criteria
Having obstacles in verbal communication.
3. RESULTS

Analisa Bivariat

a. The effect of education on defecation behavior in latrines in post-society STBM triggering

Table 1. Effect of defecation education on latrines in the community after STBM triggering in Wamesa Village, South Manokwari District in 2018

<table>
<thead>
<tr>
<th>No</th>
<th>Education</th>
<th>Defecation behavior on latrines</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Low</td>
<td>13</td>
<td>40.6</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>High</td>
<td>10</td>
<td>24.4</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>23</td>
<td>31.5</td>
<td>50</td>
</tr>
</tbody>
</table>

*p-value = 0.220; RP = 1.666; CI95% (0.842 – 3.290)

Table 1 shows that out of 32 people with low education there were 13 people (40.6%) not defecating in the toilet and as many as 19 people (59.4%) defecating in the toilet. Of the 41 highly educated people there were 10 people (24.4%) not defecating in the toilet and as many as 31 people (75.6%) defecating in the toilet. The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0.220 or p > α (0.05). This means that there is no effect of education on defecation behavior in latrines in the community after STBM triggering in Wamesa Village, South Manokwari District. The results of the value of RP = 1.666; CI95% (0.842 - 3.290) with a lower value of less than 1, so that age is not significant or is a protective factor with defecation behavior in the latrine.

b. The influence of defecation knowledge on latrines in the community after STBM triggering

Table 2 shows that out of the 25 people there were 13 people (52%) not defecating in the toilet and as many as 12 people (48%) defecating in the toilet. Of the 48 people with good knowledge there were 10 people (20.8%) not defecating in latrines and as many as 38 people (79.2%) defecating in latrines. The chi square test results on the significance of 95% (α = 0.05) obtained p-value 0.014 or p < α (0.05). This means that there is an influence of defecation knowledge in latrines in the community after STBM triggering in Wamesa Village, South Manokwari District. The results of the value of RP = 2.496; CI95% (1,280 - 4,867) interpreted that respondents who were knowledgeable were less likely to not defecate in latrines by 2,496 times than respondents who were well-informed.

C. Influence of attitude and defecation behavior in latrines in the community after STBM triggering

Table 3 shows that of the 19 people whose attitude did not support there were 11 people (57.9%) not defecating in the toilet and as many as 8 people (42.1%) defecating in the toilet. Of the 54 people, his attitude supports 12 people (22.2%) not defecating in the toilet and as many as 42 people (77.8%) defecating in the toilet. The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0.010 or p < α (0.05). This means that there is an influence of attitude with defecation behavior in latrines in the community after STBM triggering in Wamesa Village, South Manokwari District. The result of the value of RP = 2.605; CI95% (1,389 - 4,888) interpreted that the attitude of respondents who did not support tended not to defecate in the toilet by 2,605 times higher than respondents who were in a good attitude.
d. The influence of the role of health workers in defecating behavior in latrines in the community after STBM triggering

Table 4. The influence of the role of health workers in defecation on latrines in the community after STBM triggering in Wamesa Village, South Manokwari District in 2018

<table>
<thead>
<tr>
<th>No</th>
<th>Health staff role</th>
<th>Defecation behavior on latrines</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Not support</td>
<td>13</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>2</td>
<td>Support</td>
<td>10</td>
<td>18.9</td>
<td>43</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>23</td>
<td>31.5</td>
<td>50</td>
</tr>
</tbody>
</table>

p-value = 0.000; RP = 3.445; CI95% (1.809 - 6.561)

Table 4 shows that of the 20 people who stated that health workers did not support there were 13 people (65%) not defecating in the toilet and as many as 7 people (35%) defecating in the toilet. Of 53 people who stated that health workers supported there were 10 people (18.9%) not defecating in the toilet and as many as 43 people (81.1%) defecating in the toilet. The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0.000 or p < α (0.05). This means that there is an influence of the role of health workers with defecating behavior in latrines in the community after STBM triggering in Wamesa Village, South Manokwari District. The result of the value of RP = 4,421; CI95% (2.298 - 8,504) interpreted that the government’s non-supportive role tends to be for respondents not to defecate in latrines by 4,421 times higher than the support from the government’s role.

Table 5 shows that of the 19 people who stated that the role of the government did not support there were 14 people (73.7%) not defecating in latrines and as many as 5 people (26.3%) defecating in latrines. While from 54 people who stated the government’s role in supporting there were 9 people (16.7%) not defecating in latrines and as many as 45 people (83.3%) defecating in latrines. The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0.000 or p < α (0.05). This means that there is an influence of the government’s role in defecating in latrines in the community after the STBM triggering in Wamesa Village, South Manokwari District. The result of the value of RP = 4,643; CI95% (2,323 - 9,279) interpreted that the government’s non-supportive role tends to be for respondents not to defecate in latrines by 4,643 times higher than the support from the government’s role.

e. The influence of the government’s role in defecating in latrines in the community after STBM triggering

Table 5. The influence of the government’s role in defecating in latrines in the community after STBM triggering in Wamesa Village, Manokwari District, South in 2018

<table>
<thead>
<tr>
<th>No</th>
<th>Government Role</th>
<th>Defecation behavior on latrines</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Not support</td>
<td>14</td>
<td>73.7</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Support</td>
<td>9</td>
<td>16.7</td>
<td>45</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>23</td>
<td>31.5</td>
<td>50</td>
</tr>
</tbody>
</table>

p-value = 0.000; RP = 4,421; CI95% (2,298 - 8,504)

Table 5 shows that of the 19 people who stated that the role of the government did not support there were 14 people (73.7%) not defecating in latrines and as many as 5 people (26.3%) defecating in latrines. While from 54 people who stated the government’s role in supporting there were 9 people (16.7%) not defecating in latrines and as many as 45 people (83.3%) defecating in latrines. The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0.000 or p < α (0.05). This means that there is an influence of the role of cadres with defecating behavior in latrines in the community after STBM triggering in Wamesa Village, South Manokwari District. The result of the value of RP = 4,421; CI95% (2,298 - 8,504) interpreted that the government’s non-supportive role tends to be for respondents not to defecate in latrines by 4,421 times higher than the support from the government’s role.

f. Effect of the role of cadres on defecation behavior in latrines in the community after STBM triggering

Table 6. Effect of the role of cadres with defecating behavior on latrines in the community after STBM triggering in Wamesa Village, South Manokwari District in 2018

<table>
<thead>
<tr>
<th>No</th>
<th>Cadre role</th>
<th>Defecation behavior on latrines</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Not support</td>
<td>15</td>
<td>71.4</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Support</td>
<td>8</td>
<td>15.4</td>
<td>44</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>23</td>
<td>31.5</td>
<td>50</td>
</tr>
</tbody>
</table>

p-value = 0.000; RP = 4,643; CI95% (2,323 - 9,279)

Table 6 shows that from 21 people who did not support the role of cadres, there were 15 people (71.4%) who did not defecate in the toilet and as many as 6 people (28.6%) defecated in the toilet. Whereas from the 52 people who supported the cadre role there were 8 people (15.4%) not defecating in the toilet and as many as 44 people (84.6%) defecating in the toilet. The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0.000 or p < α (0.05). This means that there is an influence of the role of cadres with defecating behavior in latrines in the community after STBM triggering in
Wamesa Village, South Manokwari District. The results of the RP value are 4,643; CI95% (2,323 - 9,279) which interpreted the role of cadres who did not support tended to be respondents for not defecating latrines by 4,643 times higher than the support of cadre roles.

g. The effect of participation in defecation behavior on latrines in the community after STBM triggering

Table 7. The influence of defecation participation on latrines in the community after STBM triggering in Wamesa Village, South Manokwari District, South in 2018

<table>
<thead>
<tr>
<th>No</th>
<th>Partisipasi</th>
<th>Defecation behavior on latrines</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Tidak</td>
<td>Ya</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tidak Mendukung</td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>1</td>
<td>Mendukung</td>
<td>5</td>
<td>10.2</td>
<td>44</td>
</tr>
<tr>
<td>2</td>
<td>Total</td>
<td>23</td>
<td>31.5</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 7 shows that out of 24 people who stated that community participation did not support there were 18 people (75%) not defecating in latrines and as many as 6 people (25%) defecating in latrines. While from 5 people who stated that community participation supported there were 5 people (10.2%) not defecating in the toilet and as many as 44 people (89.8%) defecating in the toilet. The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0.000 or p <α (0.05). This means that there is an influence of community participation in defecation in latrines in the community after the STBM triggering in Wamesa Village, South Manokwari District. Results of the value of RP = 7,350; CI95% (3,104 - 17,406) interpreted that community participation that did not support respondents tended not to defecate in latrines was 7,350 times higher than the support of community participation.

4. DISCUSSION

The results showed that the community after the triggering of STBM in Wamesa District, South Manokwari District had defecation behavior of 50 people (68.5%). This shows that the behavior of the community in using latrines for defecation is still not optimal for the community. Communities that do not have private latrines, they use public toilet facilities for defecation needs (BAB) or to stay with relatives and neighbors to defecate. The most common public latrine is the cemplung latrine located on the edge of the sea, where dirt is directly dumped into the sea without using saptic tank, the cemplung toilet does not have a water reservoir. So that people who want to defecate inevitably have to bring water from the house to wash stool after bowel movements but cannot be used to clean the dirty toilet floor and there is no toilet cleaning tool. Because the latrine used is a public toilet, no community is responsible for maintaining the cleanliness of the toilet.

The ignorance of the community about the importance of having a toilet has not been realized by most of the Wamesa District of South Manokwari District. In fact, with the toilet, the cleanliness of the house will be maintained so as to improve the quality of health of its residents. In addition, with the toilet, it will add to the aesthetic value of the house itself.

4.1 Effect of community education on defecation behavior in latrines after STBM triggering

A person's level of education includes predisposing factors for health behavior, but the level of education makes it easier for behavior change to occur, the higher the level of education, the easier it is for someone to receive new information that is constructive (Prayoto, 2014). The results showed that there was no effect of education on defecation behavior in latrines in the community after STBM triggering in Wamesa Village, South Manokwari District. The education level of respondents was mostly in the high category of 56.2% and low as much as 43.8%. 40.6% of respondents with low education had defecation behavior in latrines, while 24.4% of respondents who were highly educated did not defecate in latrines. This proportion

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is not much different between respondents who are highly educated.

The results of this study are in line with the research conducted by Pane (2009) that the level of education does not influence the behavior of using latrines. According to Mubarak (2011), the more people or someone exposed to information, the better their knowledge even if the community is low educated.

The prevalence ratio test results obtained that education is a protective factor that decreases defecation behavior in latrines. This is because there are variables that more strongly influence the education of respondents, namely knowledge and attitudes of the community. One of the factors that influence a person's health behavior according to Notoatmdjo (2011), namely predisposing factors which include knowledge, beliefs, values and one's perceptions of health behavior. Formal education is not always an influential factor in shaping one's knowledge, attitudes, perceptions, beliefs and judgments about health, but non-formal education through counseling and training.

4.2 Influence of community knowledge, with defecation behavior in latrines after STBM triggering

One of the basic things that is seen as giving the contribution to the habit of defecation in any place is the level of people's knowledge of the dangers that can be caused by the habit of defecating in any place in the form of a disease outbreak.

The results showed that there was an effect of defecation knowledge on latrines in the community after STBM triggering in Wamesa Village, South Manokwari District. Knowledgeable respondents have 52% less defecation in latrines whereas from good knowledge there are 20.8% not defecating in latrines. This shows that the better knowledge of the respondents the better they behave in using latrines to defecate. The results of this study support the research from Widowati (2015) that there is a significant relationship of knowledge with open defecation behavior.

According to Notoatmojo (2011), cognitive knowledge is a domain that is very important for the formation of an action. Action based on knowledge will be more lasting than behavior that is not based on the knowledge of respondents about the importance of having a family toilet at home. The knowledge discussed in this study is about the use of family latrines at home. Knowledge is closely related to one's actions in this case knowledge about the use of family latrines at home will greatly affect one's behavior. Good knowledge that is known to the respondents knowing about the purpose of latrines, the distance of septic tank >10 m with the source of drinking water, the benefits of using latrines that can prevent transmission of disease. Whereas the lack of knowledge by the people who know about the defecation in any place such as on the beach, pond or garden cannot cause harm to the environment and insects or animals that can transmit germs from human feces which can be spread by hand, food and water and do not know how to break the chain of transmission of disease from human feces. The results of the above research can be explained by the low level of knowledge of the community which then influences their understanding of the benefits of latrines as places to defecate.

Antuli (2012) in the results of his research suggested that knowledge is one of the drivers for changing behavior, so it can be said that one's knowledge of latrines will determine their behavior in terms of defecation. When linked to this level of knowledge, it can be explained that the low level of knowledge of the community in the aspects of knowing and understanding can also be explained as the influence of the low level of education of the community so that this gives an impact on knowledge and understanding of the use of latrines.

The low knowledge of respondents has an impact on the behavior of people who are still defecating in any place, where the prevalence ratio test results that low
public knowledge tends to defecate in any seebars place 2,496 times higher than people who have good knowledge. This is very risky for public health because it generates vector nests (mosquitoes, flies, mice, etc.), pollutes the environment against sources of drinking water, can provide a situation / environment that is not good and can cause bad smell (Notoatmodjo, 2011). This condition needs attention from health workers on an ongoing basis in providing counseling about the use of latrines through health education that can increase people’s knowledge in changing clean and healthy lifestyle. The results of the Dunggio (2012) study that successfully revealed that knowledge is the element that plays the most important role that assesses a person's abilities in behave in daily life primarily in receiving various information both through the media and direct officers.

4.3 Influence of community attitudes, defecation behavior in latrines after STBM triggering

Attitude is a reaction or response of someone who is still closed to a stimulus or object. Manifestations of attitudes cannot be directly seen, but can only be interpreted in advance of closed behavior. Attitude is not yet an action or activity, but it is a "pre-disposition" of action or behavior. That attitude is still a closed reaction, not an open reaction to open behavior. (Notoatmodjo, 2011). The results showed that there was an effect of defecation behavior on latrines in the community after STBM triggering in Wamesa Village, South Manokwari District. Respondents who have an attitude that does not support there are 57.9% not defecating in the toilet while the respondents whose attitude supports there are 22.2% not defecating in the toilet. This shows that the lower the attitude that does not support the defecation perileku in any place is higher, where from the results of the test of the prevalence of attitudes that do not support tend to defecate the toilet by 2.605 times higher than respondents who have a good attitude about defecation in the toilet.

The attitude of the people in Wamesa District, South Manokwari District after the STBM triggering which had a good attitude about the use of latrines stated that defecation in the open did not provide the same comfort with defecation in the toilet and could cause disease and stated that it was not a reason to live on the beach and have a garden, so that the community defecates in any place. The attitude of the people who do not support most states that defecation in any place cannot cause environmental pollution and that drinking especially infants and toddlers can defecate in the yard.

According to Social Cognitive Theory (SCT), outcome expectations are very important to help someone in determining attitudes toward certain behaviors (Prayoto (2014), individuals who have a high outcome expectation will think preventive measures will be beneficial for them, so that it will make it easier for them to behave healthy, and vice versa individuals who have a low outcome expectation will try to cover up the reality by holding a reason as if there is no meaning at all (WHO, 2010). This study proves that there is a relationship between attitudes toward lack of defecation behavior in latrines after triggering. This means that perception is an internal factor that can affect a person's behavior (Edberg, 2007). Awareness is the key for someone to break away from unethical or wrong decisions. Someone who has released himself from morals will do bad actions against himself or others, but the process of action seems morally justified by him. The community that still applies open defecation after knowing that this is an improper act, then it has made its own justification of morality. They make a bad behavior seem to be a behavior that looks not too bad and even looks good (Darsanah, 2014).

The fact is that there are still people defecating on the edge of the monitor and gardens. This happens because the behavior has been carried out by the community for a long time, it has become a habit, so that the
community considers this to be normal and has no impact, coupled with seeing neighbors and friends still defecating in the river as if it were justification for action that is. The importance of the role of the government, health workers and cadres and local community leaders in changing the behavior of defecating communities in any place.

4.4. Influence of the role of officers in defecation behavior in latrines in the community after STBM triggering

Health workers are everyone who devotes themselves in the health sector and have knowledge and / or skills through education in the health sector which requires certain types of authority to carry out health efforts. One element that plays a role in accelerating health development is health workers who are in charge of health care facilities in the community (Notoatmodjo, 2011). The results showed that there was an influence on the role of health workers with defecating behavior in latrines in the community after STBM triggering in Wamesa Village, South Manokwari District. Respondents who stated that health workers did not support 65% did not defecate in the latrine while respondents who stated that health workers supported 18.9% of them did not defecate in the toilet and as many as 43 people (81.1%) defecated in the toilet. This shows that the better role of health workers can change people's behavior in using latrines as a means of healthy defecation. This is also reinforced from the results of the prevalence ratio test that the role of health workers who do not support the toilet does not tend to be 3.445 times higher than respondents who support health workers.

This research is in line with the research conducted by Darsanah (2014) which revealed that there was an influence of the role of health workers in the use of latrines. The role of health workers in Wamesa Village, South Manokwari District who support the community response states that health workers once conveyed information about the importance of latrines for families, clean and healthy behavior and encouraged people not to defecate anywhere and health workers often came to monitor and health in monitoring health issues and environmental cleanliness.

Respondents who responded that the role of non-supportive health workers was caused by health workers never conveying the impact caused by open defecation, healthy toilet conditions and encouraging all communities to defecate in latrines. It can be concluded that the role of health staff is not optimal in conveying information or providing support to the community in using latrines.

From the data above, the researchers assumed that the programs owned by health center health workers in the Wamesa Village area were good enough, but in its implementation it had not been carried out optimally by health workers, besides, from the community's perspective, the tendency to be clean and healthy (PHBS) still low, besides the people's mindset that expects the help of latrines from the government and the community felt that they benefited from defecating anywhere on the waterfront because they did not pollute and smell in their homes.

Therefore the role of officers is more intensified, for example through health education activities about healthy latrines, the benefits of healthy toilets, due to defecation in any place and how to build healthy latrines by promoting healthy latrines. The installation of posters about the dangers of open defecation, the benefits of the importance of having healthy latrines, and being able to form cadres in the village so that they can optimize efforts to improve the health status of the community in the village together with the community. In addition, the efforts that can be made are to increase public knowledge through health promotion, promotion and media campaigns for instilling knowledge in the community. This can also be done by health workers at the Puskesmas when handling a patient, or even every examination.
4.5. The influence of the government's role in defecating in latrines in the community after STBM triggering

The success of government programs in the field of health in the community will be successful if the members are each family managed to carry out their responsibilities. So that the role of the family is able to function as a means of solving existing health and social problems (Notoatmodjo, 2011). The results of the study showed that respondents' responses to the role of government mostly supported as many as 54 people (74%) in the use of latrines. The results of statistical tests have an influence on the role of the government with defecation in latrines in the community after the STBM triggering in Wamesa Village, South Manokwari District. Respondents who stated the government's role did not support there were 73.7% not defecating in latrines while respondents who stated the government's role supported 16.7% not defecating in latrines. This shows that supporting government efforts can increase the utilization of latrines by the community.

The type of support according to Erlinawati (2009) can be seen from two aspects, namely support in the form of providing information or information about healthy latrines, and then support in the form of toilet assistance in the respondent's neighborhood. During this time the support obtained by the people of Wamesa Village was one of the villages in Manokwari District which received the STBM program funded by the Unicef WES program, which the community obtained information about STBM through behavior change triggering activities and built public latrines through village funds.

4.6 Effect of the role of cadres on defecation behavior in latrines in the community after STBM triggering

Health cadres are the power of the local community in mobilizing public health efforts (Ministry of Health of Republic of Indonesia, 2012). The results showed that there was an influence of the role of cadres with defecation behavior in the latrines of the community after STBM triggering in Wamesa District, South Manokwari District, where respondents who stated the role of cadres who did not support there were 71.4% not defecating in the latrine while respondents' responses stated the cadre role which supports 15.4% not defecating in the toilet. This research is in line with the research conducted by Kurniawati (2015) that there is an influence of the role of cadres in the behavior of using latrines. The role of cadres from supporting community responses is because there are cadres around the community's residence, actively motivating the community to live clean and healthy lives and often provide information about clean and healthy living behaviors, such as defecating in the toilet. Whereas the community response that stated cadres did not support because the cadres did not encourage the community to clean the Kampung environment, contacted health workers if there were health problems that occurred in the village / and did not often visit and monitor the houses of the father / mother to ensure that the house and environment were always clean.

The role of health cadres needed according to Darsana (2014) is giving motivation, technical guidance, mobilization, empowerment and counseling assisted by assisted puskesmas officers who are expected to empower the community by growing and increasing the knowledge, willingness and ability of individuals, families and communities to prevent diseases that are expected to improve public health so that a healthy environment is created as well as being active in organizing every health effort. But the information obtained at the time of the study, respondents said that the promotion of latrine use and utilization both those that already existed and those that did not have latrines were not carried out optimally by health cadres to utilize latrines was only felt by some respondents. In addition there are no activities or meetings. Health promotion
is only limited to the introduction and the provision of public toilet assistance without providing a deep knowledge to the community regarding healthy latrines and their use.

The importance of raising health cadres in the community around the community so that the community can be monitored by health cadres in providing direct information and providing health facilities in the form of media - health media that can be used to provide health education to the community where the better the community will be better utilization toilet.

4.7. Effect of community participation on defecation behavior in latrines in the community after STBM triggering

The target community in CBTS is not forced to implement the program activities, but the program seeks to increase community participation in its activities. The results of the study showed that the community participation that did not support 75% did not defecate in the toilet while the community participation that supported there was 10.2% not defecating in the toilet. The results of the prevalence ratio test showed that non-supportive community participation tended to be that the community did not defecate in the toilet by 7,350 times higher than the community participation in support.

5. CONCLUSION

Based on the results and discussion can be concluded as follows:
1. There is no effect of education on defecation behavior in latrines in the community after STBM triggering in Wamesa District, South Manokwari District (p-value 0.010; RP = 2.605; CI95% (1.389 - 4.888).
2. There is an influence of defecation knowledge on latrines in the community after STBM triggering in Wamesa District, South Manokwari District (p-value 0.000; RP = 3.445; CI95% (1.809 - 6.561).
3. There is an influence of attitude and defecation behavior on latrines to the community after STBM triggering in Wamesa District, South Manokwari District (p-value 0.000; Rp. 4.421; CI95% (2.298 - 8.504).
4. There is an influence of the role of health workers in defecating behavior in latrines in the community after STBM triggering in Wamesa Village, South Manokwari District (p-value 0.000; RP = 3,445; CI95% (1,280 - 4,867).
5. There is an influence of the government's role in defecating in latrines in the community after STBM triggering in Wamesa Village, South Manokwari District (p-value 0.000; Rp. 4.421; CI95% (2.298 - 8.504).
6. There is an influence of the role of cadres with defecation behavior in latrines in the community after STBM triggering in Wamesa District, South Manokwari District (p-value 0.000; RP = 4,643; CI95% (2,323 - 9,279)
7. There is an influence of community participation in defecation behavior in latrines in the community after STBM triggering in Wamesa Village, South Manokwari District (p-value 0.000; RP = 7,350; CI95% (3,104-17,406).

REFERENCES

- Dinkes Kab. Manokwari, Laporan Progres Stop Buang Air Besar Sembarangan Triwulan II Kabupaten Manokwari Tahun 2018, Manokwari.


Kementerian Kesehatan, 2013. Kepmenkes RI Nomor 852/Menkes/SK/IX/2008 Ttg Strategi Nasional Sanitasi Total Berbasis Masyarakat (STBM), Jakarta:

Kemeterian Kesehatan, 2013. Kepmenkes RI Nomor 852/Menkes/SK/IX/2008 Ttg Strategi Nasional Sanitasi Total Berbasis Masyarakat (STBM), Jakarta:


Teguh Priatno, Soesilo Zauhar, Imam Hanafi 2014. Faktor-Faktor yang Berpengaruh Terhadap Keberhasilan
Program Sanitasi Total Berbasis Masyarakat (STBM) di Kota Tasikmalaya.


The Factors Affecting to Selection of Long Term Contraception Method in Lush Age Couples in Prafi Health Primary Manokwari District West Papua Province

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ABSTRACT

Background: the use of contraceptives helps couples of childbearing age in the setting of pregnancy and the use of more appropriate contraceptive tools to use short-term versus long-term contraception caused by various factors including age, education, ethnicity, social economy, parity, knowledge, health care facilities and husband's participation.

Objective: To find out the factors that influence the selection of long-term contraceptive methods in couples of childbearing age at the Prafi Health Center in Manokwari Regency.

Research Method: Analytical with cross sectional study design. The population is all acceptors in Prafi Health Center as many as 625 people and a sample of 86 people in September-October 2018 by systematic sampling. Data were obtained using questionnaires and analyzed using chi square and logistic regression.

Results: Factors that influence the selection of long-term contraceptive methods in couples of childbearing age is parity (p-value 0,043; RP = 2,340; CI95% (1,014 - 5,398), knowledge (p-value 0.001 RP = 2.677; CI95% (1,516 - 4,727), health care facilities (p-value 0.006; Rp = 2,279; CI95% (1.369 - 3,796) and husband's participation (p-value 0,000; RP = 3,920; CI95% (1,901 - 8,081). While the factors that did not influence the selection of long-term contraceptive methods for couples of childbearing age were maternal age (p-value 0,228; RP = 1,853; CI95% (0,746 - 4,602), education (p-value 0,221; Rp. 0,490; CI95% (0,171 - 1,399), ethnicity (p-value 1,000 Rp = 0,956; CI95% (0,547 - 1,669). Factors that predominantly influence the selection of long-term contraceptive methods are husband's participation and knowledge.

Keywords: Long Term Contraception, Lush Age Couples, Health Primary

1. INTRODUCTION

The World Health Organization (WHO) reports that the most widely used long-term contraceptive method is sterilization. Hormone contraception is in third place worldwide (WHO, 2016). Data from the Indonesian Health Profile in 2017 reported that there were 48,536,690 couples in reproductive age, namely 6,663,156 new family planning participants (13.73%), 36,306,662 active participants (74.80%). Most fertile age couples (PUS) currently use contraception as much as 59.7%, dropping contraception by 24.8% and 15.5% never using contraception. From these data, 74% of short-term contraceptive use included condoms as much as 3.23%, 22.81% pills, 47.96% injections and 26% long-term contraceptive use including 11.20% implants, 10 IUDs, 61% and female operative method (MOW) of 3.54% and male operative method (0.64%)

The West Papua Provincial Health Office profile data for 2017 were 87,324 family planning acceptors, namely short-term contraceptive use as much as 86.7% including 3.6% condoms, 22.9% injections, 41% pills. While the use of long-term contraception as much as 12.93% consisted
of 3% IUD, 0.2% MOP, 0.4% MOW and 9.4% implants (West Papua Provincial Health Office, 2017).

The profile data for the 2017 Manokwari District Health Office profile is 18,599 family planning acceptors, with short-term contraceptive use as much as 82.8% including 2.2% condoms, 54.9% injections, 25.7% pills. While long-term contraceptive use as much as 17.92% consisted of IUD as much as 0.3%, MOP as much as 0.7%, MOW as much as 0.6% and implants as much as 15.6% (Provincial Health Office West Papua, 2017).

According to Lawrence Green (1980) in Notoatmodjo (2011), there are three factors that cause a person to behave, namely a predisposing factor, which is age, education, occupation, knowledge, attitudes, religion and number of children, where these factors trigger towards behavior that is the basis or motivation for his actions due to the tradition of habits, beliefs, education level and socio-economic level. Enabling factors are enabling factors for behavior that enable motivation or action to take place. This factor includes the availability of facilities and infrastructure or health facilities. Strengthening factor (reinforcing factor), is a factor that determines whether health measures get support or not. This factor was manifested in the form of family support such as husbands, religious leaders, community leaders including local health workers.

According to Ramdani (2014) who examined the factors that influence the use of contraception in Bantul, Yogyakarta revealed that the factors of age, educational factors, income factors and knowledge factors on the participation of husbands in the use of contraception. Meanwhile, the parity factor or number of children does not affect the husband's participation in the use of contraception. The most dominant variable influencing the use of contraception is the age factor. Research conducted by Zebua (2017) or one of the factors that influence the participation of mothers in long-term contraception is adequate health care facilities and accessibility in accessing family planning services. The National Family Planning Coordinating Board (2013) revealed that women of childbearing age are women aged 15-45 years and the factors that influence acceptors in choosing contraceptive methods include partner factors including age, lifestyle, frequency of intercourse, number of families desired, experience with past contraceptive methods and attitudes of wives and husbands. While health factors include health factors including health status, menstrual history, family history, physical examination, pelvic examination and contraceptive method factors include effectiveness, side effects and costs.

Data obtained from the Prafi Timika Community Health Center in 2017 amounted to 3,703 WUS of targeted WUS with 70.48% of active family planning participants, namely 63.22% using short-term contraceptive methods including 3.22% condoms, 36.9% injections and pills as much as 23.1%. While the use of long-term contraceptive methods was 26.74% including implants as much as 25.33%, IUD as much as 0.34%, MOW as much as 0.27% and MOP as much as 0.8% (Profile of Puskesmas Prafi, 2017).

Based on the description of the problem in the background, the authors are interested in conducting a study entitled "Factors that Affect the Selection of long-term contraceptive methods in couples of childbearing age in the Prafi District of Manokwari District".

2. MATERIALS AND METHODS

A. Type of Research

Research using quantitative methods in this study included in the category of correlation research. The definition of correlation research by Arikunto (2010) is research conducted by researchers to determine the level of relations between two or more variables, without making changes, additions, or manipulations of data that already exists. This study uses a cross sectional study design, namely data
collection is done simultaneously at one time (Swarjana, 2013).

**B. Time and Place of Research**
This research was carried out by taking the location of the Puseksmas Prafi Manokwari District research site. The time of the study was conducted in September - October 2018.

**C. Population**
Population is a generalization area consisting of objects / subjects that have certain qualities and characteristics determined by researchers to be studied and then conclusions drawn (Sugiyono, 2013). The population in this study were all women of childbearing age in the Prafi Community Health Center in Manokwari Regency in the last 3 months (June - August 2018) as many as 625 acceptors who made repeat visits.

**D. Samples**
The sample is part of the number and characteristics possessed by the population (Sugiyono, 2013). The sample is or representative of the population studied. The sample size is large in this study was 68.

### 3. RESULTS

**Analisa Bivariat**

**a. Effect of age by choosing a long-term contraceptive method in couples of childbearing age**

Table 1. The influence of age by choosing a long-term contraceptive method in couples of childbearing age at the Prafi Community Health Center in Manokwari Regency

<table>
<thead>
<tr>
<th>No</th>
<th>Age</th>
<th>Contraceptive method</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Non MKJP</td>
<td>MKJP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>1</td>
<td>20-35 year</td>
<td>28</td>
<td>41.2</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>&lt; 20 and ≥ 35 year</td>
<td>42</td>
<td>22.2</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>32</td>
<td>54</td>
<td>62.8</td>
</tr>
</tbody>
</table>

\[ p\text{-value} = 0.228; \text{RP} = 1.853; \text{CI95\%} (0.746 - 4.602) \]

Table 1 shows that out of 68 mothers aged 20-35 years there were 28 people (41.2%) who chose non MKJP and MKJP as many as 14 people (77.8%). The results of the chi square statistical test on the significance value of 95% \((\alpha = 0.05)\) obtained \(p\)-value 0.228 or \(p > \alpha (0.05)\). This means that there is no influence on the age of the mother with the selection of long-term contraceptive methods in couples of childbearing age. The results of the value of \(\text{RP} = 1.853; \text{CI95\%} (0.746 - 4.602)\) with a lower value of less than 1, so age is not a significant factor in the selection of long-term contraceptive methods in couples of childbearing age.

**b. Influence of education by selecting long-term contraceptive methods in couples of childbearing age**

Table 2. The influence of education with the selection of long-term contraceptive methods in couples of childbearing age at the Prafi Health Center in Manokwari Regency

<table>
<thead>
<tr>
<th>No</th>
<th>Education</th>
<th>Contraceptive method</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Non MKJP</td>
<td>MKJP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>1</td>
<td>Low</td>
<td>12</td>
<td>40.8</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>High</td>
<td>29</td>
<td>71</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>32</td>
<td>54</td>
<td>62.8</td>
</tr>
</tbody>
</table>

\[ p\text{-value} = 0.221; \text{RP} = 0.490; \text{CI95\%} (0.171 - 1.399) \]

Table 2 shows that out of 15 low-educated mothers there were 3 people (20%) who chose non MKJP and MKJP as many as 12 people (80%). Whereas from 71 highly educated mothers there were 29 people (40.8%) choosing 42 non-MKJP and MKJP (59.2%). The results of the chi square statistical test on the significance value of 95% \((\alpha = 0.05)\) obtained \(p\)-value 0.221 or \(p > \alpha (0.05)\). This means that there is no influence of education with the selection of long-term contraceptive methods in couples of childbearing age. The results of the value of \(\text{RP} = 0.490; \text{CI95\%} (0.171 - 1.399)\) with a lower value of less than 1, so education is not a significant factor in the selection of long-term contraceptive methods in couples of childbearing age.

**c. Tribal influence with the selection of long-term contraceptive methods in couples of childbearing age**
Table 3. Tribal influence with the selection of long-term contraceptive methods in couples of childbearing age at the Prafi Community Health Center in Manokwari Regency

<table>
<thead>
<tr>
<th>No</th>
<th>Tribe</th>
<th>Contraceptive method</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Non MKJP</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Papua</td>
<td></td>
<td>19</td>
<td>63.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MKJP</td>
<td>13</td>
<td>36.5</td>
</tr>
<tr>
<td>2</td>
<td>Non Papua</td>
<td></td>
<td>13</td>
<td>61.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MKJP</td>
<td>13</td>
<td>38.2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>32</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>52</td>
<td>86</td>
</tr>
</tbody>
</table>

\(p\)-value = 1.000; RP = 0.956; CI95% (0.547 – 1.669)

Table 3 shows that out of 32 mothers of the Papuan tribe there were 19 people (36.5%) who chose Non MKJP and MKJP as many as 33 people (63.5%), while out of 34 non-Papuan tribal mothers there were 13 people (38.2%) selected 21 MKJP and MKJP (61.8%). The results of the chi square statistical test on the significance value of 95% (\(\alpha = 0.05\)) obtained \(p\)-value 1.000 or \(p > \alpha (0.05)\). This means that there are no tribal influences with the selection of long-term contraceptive methods in couples of childbearing age. The results of the value of RP = 0.956; CI95% (0.547 - 1.669) with a lower value of less than 1, so that socio-economic is not meaningful or is a protective factor with the selection of long-term contraceptive methods in couples of childbearing age.

d. Socio-economic influence with the selection of long-term contraceptive methods in couples of childbearing age

Table 4. Socio-economic influence with the selection of long-term contraceptive methods in couples of childbearing age at the Prafi Community Health Center in Manokwari Regency

<table>
<thead>
<tr>
<th>No</th>
<th>Social economy</th>
<th>Contraceptive method</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Non MKJP</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Less</td>
<td></td>
<td>19</td>
<td>63.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MKJP</td>
<td>13</td>
<td>36.5</td>
</tr>
<tr>
<td>2</td>
<td>Enough</td>
<td></td>
<td>13</td>
<td>61.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MKJP</td>
<td>13</td>
<td>38.2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>32</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>52</td>
<td>86</td>
</tr>
</tbody>
</table>

\(p\)-value = 1.000; RP = 0.956; CI95% (0.547 – 1.669)

Table 4 shows that out of 52 people with socio-economic there were 19 people (36.5%) who chose Non MKJP and MKJP as many as 33 people (63.5%). Whereas from 34 socio-economic mothers, there were 13 people (38.2%) who chose Non MKJP and MKJP as many as 21 people (61.8%). The results of the chi square statistical test on the significance value of 95% (\(\alpha = 0.05\)) obtained \(p\)-value 1.000 or \(p > \alpha (0.05)\). This means that there is no socio-economic influence with the selection of long-term contraceptive methods in couples of childbearing age. The result of the value of RP = 0.956; CI95% (0.547 - 1.669) with a lower value of less than 1, so that socio-economic is not meaningful or is a protective factor with the selection of long-term contraceptive methods in couples of childbearing age.

e. Effects of parity on the selection of long-term contraceptive methods in couples of childbearing age

Table 5. The effect of parity on the selection of long-term contraceptive methods in couples of childbearing age at the Prafi Community Health Center in Manokwari Regency

<table>
<thead>
<tr>
<th>No</th>
<th>Parity</th>
<th>Contraceptive method</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>#2 child</td>
<td>Non MKJP</td>
<td>27</td>
<td>80.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MKJP</td>
<td>7</td>
<td>19.2</td>
</tr>
<tr>
<td>2</td>
<td>&gt; 2 child</td>
<td>Non MKJP</td>
<td>5</td>
<td>30.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MKJP</td>
<td>12</td>
<td>69.6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>32</td>
<td>62.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>55</td>
<td>37.2</td>
</tr>
</tbody>
</table>

\(p\)-value = 0.043; RP = 2.340; CI95% (1.014 – 5.398)

Table 5 shows that out of 60 people with parity <2 children there were 27 people (45%) who chose Non MKJP and MKJP as many as 33 people (55%). Whereas from 26 parity people >2 children, there were 5 people (19.2%) who chose Non MKJP and MKJP as many as 21 people (80.8%). The results of the chi square statistical test on the significance value of 95% (\(\alpha = 0.05\)) obtained \(p\)-value 0.043 or \(p <\alpha (0.05)\). This means that there is an influence of parity with the selection of long-term contraceptive methods in couples of childbearing age. Results of the value of RP = 2.340; CI95% (1.014 - 5.398) interpreted that mothers with parity <2 children did not use long-term contraceptive method 2,340 times compared to respondents with parity >2 children.

f. Effect of knowledge with the selection of long-term contraceptive methods in couples of childbearing age

Table 6. The influence of knowledge with the selection of long-term contraceptive methods in couples of childbearing age at the Prafi Health Center in Manokwari Regency

<table>
<thead>
<tr>
<th>No</th>
<th>Knowledge</th>
<th>Contraceptive method</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Less</td>
<td>Non MKJP</td>
<td>20</td>
<td>77.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MKJP</td>
<td>6</td>
<td>22.6</td>
</tr>
<tr>
<td>2</td>
<td>Good</td>
<td>Non MKJP</td>
<td>12</td>
<td>41</td>
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<tr>
<td></td>
<td></td>
<td>MKJP</td>
<td>22</td>
<td>59</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>53</td>
<td>37.2</td>
</tr>
</tbody>
</table>

\(p\)-value = 0.001; RP = 2.677; CI95% (1.516 – 4.727)

Table 6 shows that out of 60 people with knowledge less than or equal to 2 children, there were 20 people (66.6%) who chose Non MKJP and MKJP as much as 13 people (33.4%) who chose MKJP and MKJP as many as 21 people (66.6%). Whereas from 26 knowledge >2 children, there were 12 people (46.2%) who chose Non MKJP and MKJP as many as 18 people (53.8%) who chose MKJP and MKJP as many as 21 people (69.2%). The results of the chi square statistical test on the significance value of 95% (\(\alpha = 0.05\)) obtained \(p\)-value 0.001 or \(p <\alpha (0.05)\). This means that there is an influence of knowledge with the selection of long-term contraceptive methods in couples of childbearing age.
Table 6 shows that out of 33 people with less than 20 knowledge (60.6%) chose 13 MKJP and MKJP as many as 13 people (39.4%). Whereas from 53 good knowledge people there were 12 people (22.6%) who chose Non MKJP and MKJP as many as 41 people (77.4%). The results of the chi square statistical test on the significance value of 95% ($\alpha = 0.05$) obtained $p$-value 0.001 or $p > \alpha$ (0.05). This means that there is an influence of knowledge with the selection of long-term contraceptive methods in couples of childbearing age. The results of the value of $RP = 2.677$; CI95% (1.516 - 4.727) interpreted that knowledge of fertile age couples who were less likely to choose long-term contraceptive methods 2,677 times compared to those of fertile age who were well-informed.

g. Influence of health care facilities by selecting long-term contraceptive methods in couples of childbearing age

Table 7 shows that out of the 24 health care facilities, there were no more than 15 people (62.5%) who chose Non MKJP and MKJP (37.5%). While from 62 people participating in health service facilities, there were 17 people (27.4%) who chose Non MKJP and MKJP as many as 45 people (72.6%). The results of the chi square statistical test on the significance value of 95% ($\alpha = 0.05$) obtained $p$-value 0.006 or $p < \alpha$ (0.05). This means that there is an influence of health care facilities by choosing long-term contraceptive methods at the age of less than 20 years, age 20-35 years, is the best age period for pregnancy and childbirth with 2 children and the distance between births 2-4 years, while less than 35 years prefers more than two or in pregnancy termination phases.

In this study respondents who were less than 20 - 35 years old as many as 41.2% chose non MKJP and while <20 and >35 years there were 22.2% choosing non MKJP. The method for using the MKJP is that they have the opportunity to use MKJP contraception. This is an effective period between 3-5 years (Sulityawati, 2011), so that mothers who want to postpone their pregnancies more than 3 years choose MKJP, while those aged > 35 years choose MKJP, because they already have children more than two so that the number of children feels enough in one family.

4. DISCUSSION

4.1. The long term terms and conditions in couples of childbearing age

The results showed that there was no significant age relationship with the selection of long term methods in couples of childbearing age. The results of this study are conducted by Sari (2015) conducted by Sari, that is not related to the selection of long-term contraceptive methods. According to Pinem (2010) the phases - women of childbirth who use contraception at the age of less than 20 years, age 20-35 years, is the best age period for pregnancy and childbirth with 2 children and the distance between births 2-4 years, while less than 35 years prefers more than two or in pregnancy termination phases.

In this study respondents who were less than 20 - 35 years old as many as 41.2% chose non MKJP and while <20 and >35 years there were 22.2% choosing non MKJP. The method for using the MKJP is that they have the opportunity to use MKJP contraception. This is an effective period between 3-5 years (Sulityawati, 2011), so that mothers who want to postpone their pregnancies more than 3 years choose MKJP, while those aged > 35 years choose MKJP, because they already have children more than two so that the number of children feels enough in one family.

4.2. The influence of contraceptive methods in couples of childbearing age

The results showed that there was no effect on the selection of long-term health services at the Prafi Health Center in Manokwari District. Low educated respondents had 20% non-MKJP assignments had 40.8% non MKJP choosing. This is a different version of respondents who are low and high educated. The results of this study are in line with the
research conducted by Christiani (2015) in Semarang that education is not related to the selection of long-term contraceptive methods.

The level of education has great influences and is a way of acting and solutions for life. People who are highly educated will usually act more rationally. Therefore educated people will more easily accept new ideas (Notoatmodjo, 2011).

Respondents who are highly educated and low income tend to have special knowledge and prior knowledge in contraception, health workers. Thus responder education is obtained by using the long-term chosen contraceptive method.

4.3. Tribal influence with the selection of long term methods in couples of childbearing age

The results of this study were that there was no ethnic influence with the selection of the long-term health methods at the Prafi Health Center in Manokwari Regency. Respondents who felt the Papuan tribe 36.5% chose non MKJP, while respondents from non-Papuans 38.2% chose non MKJP. This shows that there is no difference between tribes in choosing contraceptive methods. The selection of long-term contraceptive methods by respondents is different from the benefits of following long-term contrasts. According to Notoatodjo (2011), various ethnic groups can differ in habits, lifestyle and can lead to differences in morbidity or mortality. However, with adequate health services and counseling regarding contraception, it indirectly affects long-term contrasts regardless of race or ethnicity.

4.4. Socio-economic influence with the selection of long-term

The results showed that there were no socio-economic influences with the selection of long-term health care centers at the Prafi Health Center in Manokwari District. The results of this study are conducted by Sari (2015) in socio-economics has no effect on long-term contraceptive use.

There were 36.5% of the respondents with less socio-economic preferences for non MKJP, while there were enough socio-economic conditions, 38.2% chose non MKJP. This shows that each respondent has different reasons but has one purpose in spacing the pregnancy. In social economics, there is a lack of conceptual benefits of using contraceptive methods, which also require transportation costs. Whereas families with socio-economic conditions are sufficient to improve their family's health needs. Socio-economic influences the degree of health of the community, especially in fertile age couples in determining the right and safe contraception to use. The better social economy will contribute to health care where respondents easily get information and family planning services around them. The higher the family income, the easier it is to get the information they want, so that it can bring insight into the respondents (Zulkarnain, 2013). In this case the respondent said that even though socio-economic was low, they could still use it for their own health and family health. This means that the socio-economic layer varies in degree or position of each economic group.

4.5. The effect of parity on the selection of long term methods in couples of childbearing age

The results showed that there was an effect of parity with the selection of long term health care centers in Manokwari Regency. Respondents with parity <2 children as much as 45% chose non MKJP and parity> 2 children, there were 19.2% choosing non MKJP. The results of this study showed that mothers who had 2 children did not choose the long-term contraceptive method 2,340 times higher than mothers who had >2 children. The results of this study are conducted by Fitrianingsih (2013), that is, parity has no
effect on selection of long-term contraceptive methods.

The child is using a parity factor of <2> children can use to space or regulate their childbirth while in women who have parity >2 children are caused to terminate the pregnancy. This is according to the BKKBN (2011), that the use of MKJP reveals that many women use contraception irrationally (not according to the age of the mother and the number of children desired). Many couples still use non MKJP but for more than 2 years, this phenomenon is inefficient, so it needs to be studied further (BKKBN, 2011).

6. The effect of knowledge with the selection of long term methods in couples of childbearing age

The results showed that there was an influence of knowledge with the selection of long-term contraceptive methods in couples of childbearing age, namely couples of childbearing age with less knowledge as much as 60.6% choosing non MKJP and couples of childbearing age who were well-informed 22.6% chose non MKJP.

Knowledge is the result of knowing and this happens after people do sensing certain objects. Knowledge generally comes from experience can also be obtained from information conveyed by other people, obtained from books, newspapers, or mass media, electronics (Notoatmodjo, 2011). The absence of the influence of knowledge is due before women of childbearing age decide to use long-term contrast methods, health workers provide guidance and discuss together in the selection of contraception that is suitable for acceptors, so women of childbearing age who have less knowledge can know the contraceptive choices they use through information given from health workers.

In accordance with Islamic research (2014), that women of childbearing age gain knowledge of contraception during the reproductive period through their experience of contraception and the level of knowledge about family planning can be influenced by educational status, age and length of marriage. The longer the marriage age, the husband knows more about family planning compared to those who have just married.

4.7. Effect of health care facilities by selecting long-term contraceptive methods in couples of childbearing age

The results of the study showed that there were influences of health care facilities by choosing long-term contraceptive methods in couples of childbearing age. Respondents who responded to the health service recommendations did not support there were 62.5% choosing Non MKJP, while respondents responding to health care facilities supported that there were 27.4% choosing Non MKJP. Respondents who stated that health service facilities supported as much as 55% stated that there were information media such as brochures / leaflets on family planning use in health services, so that they knew about long-term contraceptive methods, but 65% stated that the distance to health services was close and 73% said no takes a long time to health services so choosing non MKJP contraceptive methods compared to non MKJP. While respondents who did not support and chose MKJP as much as 45% stated that the distance was far and 35% took a long time so they chose MKJP. This is reinforced from the results of the prevalence ratio test that health service facilities that do not support non-MKJP contraceptive methods are 2,279 times higher than the responses of supporting health service facilities.

According to the Ministry of Health (2010) the utilization of health services relates to the existence of information facilities and easy access to geography, which is meant in this case is a place to facilitate or inhibit this utilization is the relationship between the location of supply and location of clients that can be measured by distance, travel time and travel costs. The research conducted by Efy Research (2013) also stated the same thing which stated that
there was a significant relationship between distances with the use of MKJP in the Jagasatru Health Center in Cirebon. Zebua (2017) Based on the survey found the distance of KB services (in this case especially the installation of MKJP) from the location of the respondent's residence is far and the damaged road agency facilities are damaged.

5. CONCLUSION
Based on the results and discussion can be concluded as follows:
1. There is no influence on the age of mothers with the selection of long-term contraceptive methods in couples of childbearing age (p-value 0.228; RP = 1.853; CI95% (0.746 - 4.602). 
2. There is no influence of education with the selection of long-term contraceptive methods in couples of childbearing age (p-value 0.221; RP = 0.490; CI95% (0.171 - 1.399).
3. There is no ethnic influence with the selection of long-term contraceptive methods in couples of childbearing age (p-value 1,000 Rp = 0.956; CI95% (0.547 - 1.669).
4. There is no socio-economic influence with the selection of long-term contraceptive methods in couples of childbearing age (p-value 1,000 Rp = 0.956; CI95% (0.547 - 1.669).
5. There is the influence of parity with the selection of long-term contraceptive methods in couples of childbearing age (p-value 0.043; RP = 2.340; CI95% (1.014 - 5.398).
6. There is an influence of knowledge with the selection of long-term contraceptive methods in couples of childbearing age p-value 0.001 RP = 2.677; CI95% (1.516 - 4.727).
7. There is the influence of health care facilities by choosing long-term contraceptive methods for couples of childbearing age (p-value 0.006; Rp. 2.297; CI95% (1.369 - 3.796).

REFERENCES
- A Mallongi, R La Ane, AB Birawida, 2017. Spatial Lead Pollution in Aquatic Habitats and the Potential Risks in Makassar Coastal Area of South Sulawesi, Indonesia, Jurnal Kesehatan Lingkungan Indonesia
- Fitriani L (2014). Faktor-Faktor Yang Mempengaruhi Pemilihan Metode Kontrasepsi IUD Pada Akseptor KB di Klinik Umum Dan Rumah Bersalin Medika Utama Desa Wonokupang Kecamatan Balongbendo Kabupaten Sidoarjo
Rita Carolina Apalem et.al. The Factors Affecting to Selection of Long Term Contraception Method in Lush Age Couples in Prafi Health Primary Manokwari District West Papua Province


The Factors Affecting of Health Employee at Public Health Centre, Sentani Sub Province Jayapura

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**ABSTRACT**

**Background:** Performance of health workers is very important to improve community health status. Puskesmas Sentani as a basic health care facility in carrying out its duties is not yet maximal.

**Research objective:** to determine the factors that influences the performance of health workers at Sentani Health Center Jayapura Regency

**Research Method:** Analytical cross sectional study design. The population is health workers at Sentani Health Center and a sample of 81 people with total sampling. Data were obtained using questionnaires and analyzed using chi square test and logistic binary regression.

**Result of research:** factors that influence the performance of health workers in Sentani Health Center are work discipline (p-value = 0.003; RP = 2.357; CI95% = 1.367 - 4.065) reward (p-value = 0.020; RP = 2.553; CI95% = 1.110 - 5.869), punishment (p-value = 0.000; RP = 12.083; CI95% = 4.002 - 36.480) and leadership (p-value = 0.001; RP = 2.639; CI95% = 1.476 - 4.718). While the factors that have no effect on the performance of health workers in Sentani Health Center Regency are age (p-value = 1.000; RP = 0.954; CI95% = 0.552 - 1.649), working period (p-value = 0.414; RP = 0.733; CI95% = (0.403 - 1.334) and motivation for the performance of health workers in Sentani Health Center (p-value = 0.108; RP = 1.709; CI95% = 1.019 - 2.868).

**Keyword:** Performance, Health Workers, Public Health Centre

**INTRODUCTION**

First level health services unit and in the forefront health service system, Puskesmas make mandatory health efforts and selected health efforts tailored to conditions, needs, demands, capabilities and innovations as well as local government policies. Its functions include as a primary health care center and also a center for community empowerment. As a center for primary health services affordability and ease of access to health care facilities is very necessary because it will affect the success of puskesmas in carrying out their functions (Ministry of Health, 2010).

Employee is one of the most important factors in determining progress an organization. According to Thompson (in Robbins, 2010) quality organization depends on the quality of the people in it. To get productive and high-achieving employees in the work, organizations are required to have reciprocal tools that are in line with performance each employee in order to get productive employees and the best performance in accordance with the expectations and goals of the organization.

Health workers are the most important assets that health services must have and need to be considered by management. Humans come from the fact that people (humans) are elements that are always present in the organization. Humans make goals, make innovations and achieve organizational goals. Human resources trigger creativity in every organization. Without the existence of effective human resources it would be impossible for the organization to achieve its objectives. Human resources make other organizational resources work (Simamor, 2012).
Professional employees can be interpreted as a view to always think, work hard, work full time, discipline, honest, high loyalty, and full of dedication for the success of their work.

Performance is someone's success in carrying out tasks, work results that can be achieved by a person or group of people in an organization in accordance with their respective authority and responsibility or about how someone is expected to function and behave in accordance with the tasks assigned to him and quantity, quality and the time used in carrying out tasks (Sutrisno, 2010). To get optimal work results, one of them is leadership ability to direct employees to be willing do what the company wants. Leader in an organization, both profit oriented and non-profit oriented positions dominant in determining the back and forth of a company. That performance produced by a company is a description of the ownership of results given by the leader managing the company (Fahmi, 2013). A leader must develop an attitude in leading his subordinates. A leadership attitude can be formulated as a behavior pattern that is formed to be aligned with the interests of the organization and employees to be able to achieve the stated goals (Nasution (1994) in Riyadi, 2011). The role of the Head of Puskesmas is very important to move his subordinates to become a good work team through motivation, so that motivation can improve the performance of his subordinates such as being on time, care provided in accordance with procedures and documenting the patient's health development.

This opinion reflects how big the leadership role in an organization, so that a leader is expected to have reliable leadership skills so that organizational goals can be achieved. As for what is meant by the ability of a leader is the ability to motivate, influence, direct and communicate with subordinates. Besides that leaders must also have behaviors or ways of leadership that are adapted to the situation and conditions of the organization, which is flexible, meaning being able to adapt or adapt to the subordinate's environment (Herlambang, 2012). Some health workers at Sentani Health Center show low work discipline seen from absenteeism, employees who arrive late, from observations and information obtained from the head of staffing department, it is still found that the enthusiasm for carrying out activities is still low, and this shows the low performance of some employees towards puskesmas. In this case the researcher wants to present seven factors, namely the factors of age, years of service, motivation, work discipline, reward, punishment and leadership of the Head of Sentani Health Center. This selection is based on the fact that the eight factors appear most often in theories that discuss factors that influence employee performance. Work discipline is a form of obedience from a person's behavior in complying with certain provisions or regulations relating to work, and is applied in an organization.

Therefore, in this research, researchers are interested in conducting research with the title "Factors that Affect the Performance of Health Workers in Sentani Health Center, Jayapura Regency, Papua Province"

MATERIALS AND METHODS  
2.1. Type of Research

This study is an analytical study with a cross sectional study design that aims to determine the effect of two or more variables (Sugiyono, 2013). This study explains the relationship affects and is influenced by the variables to be studied. Using a quantitative approach because the data will be used to analyze the relationships between variables expressed by numbers or numerical scales (Sastroasmoro, 2010). This study analyzes the effect of age, years of service, work motivation, job rotation, work discipline, reward, punishment and leadership style of the Head of the Community Health Center on the performance of health workers.
2.2. Time and Location of Research
This research was carried out at the Sentani Health Center in January 2018.

2.3. Population and sample
a. Population
The population in this study were all employees at Sentani Health Center as many as 90 people, of which health workers were 88 people.

b. Samples
The sample is part of the generalization of the population studied (Sugiyono, 2013). If the population is less than 100, then the sample size is the total population. The sampling technique uses a saturated sampling technique. Thus the sample size is 81 people, caused by 6 health workers who attended education and 1 head of the Puskesmas was not included as a sample.

3. RESULTS
3.1. Bivariate Analysis
a. Effect of age on the performance of health workers
Table 1. Effect of age on the performance of health workers at Sentani Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Age</th>
<th>Performance</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 30 year</td>
<td>Less</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>&gt; 30 year</td>
<td>Less</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>Less</td>
<td>32</td>
</tr>
</tbody>
</table>

p-value = 1,000; RP = 0,954; CI95% = (0,552 – 1,649)

Based on Table 1, it shows that out of 49 health workers aged <30 years as many as 19 people (38.8%) had poor performance and 30 people (61.2%). Whereas from 32 people aged >30 years health personnel, 13 people (40.6%) had poor performance and 19 people (59.4%). The results of the chi square test obtained p-value = 1,000> 0.05. This means that there is no effect of age on the performance of health workers at Sentani Health Center which is not meaningful. The prevalence ratio test results are interpreted as age not risk factors for lack of performance of officers.

b. Effect of tenure on the performance of health workers
Table 2. Effect of tenure on the performance of health workers at Sentani Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Working period</th>
<th>Performance</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New</td>
<td>Less</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Old</td>
<td>Less</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>Less</td>
<td>32</td>
</tr>
</tbody>
</table>

p-value = 0,414; RP = 0,733; CI95% = (0,403 – 1,334)

Based on Table 2, it shows that of the 31 health workers who had a new tenure of 10 people (32.3%) had less and good performance as many as 21 people (67.7%). While of the 50 health workers who had a long working period of 22 people (44%) had poor and good performance as many as 28 people (56%). The results of the chi square test obtained p-value = 0.414> 0.05. This means that there is no effect on the working period on the performance of health workers at Sentani Health Center. The prevalence ratio test results are interpreted as a period of work not a risk factor for poor performance of officers.

c. Effect of motivation on the performance of health workers
Table 3. Effect of motivation on the performance of health workers at Sentani Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Motivation</th>
<th>Performance</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Less</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Less</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>Less</td>
<td>32</td>
</tr>
</tbody>
</table>

p-value = 0,108; RP = 1,709; CI95% = (1,019 – 2,868)

Based on Table 3, it shows that of the 19 low motivation health workers, 11 people (57.9%) had poor and good performance as many as 8 people (42.1%). While from 62 high-motivated health workers, 21 people (33.9%) had poor and good performance as many as 41 people (66.1%). The results of the chi square test obtained p-value = 0.108> 0.05. This means that there is no effect of motivation on the performance of health workers at Sentani Health Center. When viewed from the value of RP = 1,709; CI95% = (1,019 - 2,868) interpreted that health workers who have low motivation are at risk of having a performance that is less
than 1,709 times higher than health workers who are highly motivated.

d. Effect of work discipline on the performance of health workers

Table 4. The effect of work discipline on the performance of health workers at Sentani Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Work discipline</th>
<th>Performance</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less</td>
<td>Good</td>
</tr>
<tr>
<td>1</td>
<td>Less</td>
<td>19</td>
<td>61.3</td>
</tr>
<tr>
<td>2</td>
<td>Good</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>32</td>
<td>39.5</td>
</tr>
</tbody>
</table>

*p-value = 0.003; RP = 2,357; CI95% = (1,367 - 4,065)

Based on Table 4 it shows that out of 31 health workers lacking work discipline there are 19 people (61.3%) who have less and good performance as many as 12 people (38.7%). While 13 of the 50 health workers with good work discipline (26%) had poor and good performance as many as 37 people (74%). The results of the chi square test obtained p-value = 0.003 <0.05. This means that there is an influence of work discipline on the performance of health workers at Sentani Health Center. When viewed from the value of RP = 2,357; CI95% = (1,367 - 4,065) which is interpreted that health workers who have less risk work discipline have less performance 2,357 times higher than health workers who have good work discipline.

e. Effect of rewards on the performance of health workers

Table 5. Effect of reward on the performance of health workers at Sentani Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Reward</th>
<th>Performance</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less</td>
<td>Good</td>
</tr>
<tr>
<td>1</td>
<td>None</td>
<td>27</td>
<td>49.1</td>
</tr>
<tr>
<td>2</td>
<td>Exist</td>
<td>5</td>
<td>19.2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>32</td>
<td>39.5</td>
</tr>
</tbody>
</table>

*p-value = 0.020; RP = 2,553; CI95% = (1,110 - 5,869)

Based on Table 5, it shows that out of 55 health workers who stated that there were no rewards as many as 27 people (49.1%) had less and good performance as many as 28 people (50.9%). Whereas from 26 health workers who stated that there were 5 people rewarding (19.2%) had less and good performance as many as 21 people (80.8%). The results of the chi square test obtained p-value = 0.020 <0.05. This means that there is an influence of reward on the performance of health workers at Sentani Health Center. When viewed from the value of Rp = 2,553; CI95% = (1,110 - 5,869) which was interpreted that health workers who did not have a risky reward had less performance 2,553 times higher than health workers who received rewards.

f. The effect of punishment on the performance of health workers

Table 6. The effect of punishment on the performance of health workers at Sentani Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Punishment</th>
<th>Performance</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less</td>
<td>Good</td>
</tr>
<tr>
<td>1</td>
<td>None</td>
<td>29</td>
<td>80.6</td>
</tr>
<tr>
<td>2</td>
<td>Exist</td>
<td>3</td>
<td>6.7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>32</td>
<td>39.3</td>
</tr>
</tbody>
</table>

*p-value = 0.000; RP = 12,083; CI95% = (4,002 - 36,480)

Based on Table 6, it shows that out of 36 health workers stated that there was no punishment as many as 29 people (80.6%) had less and good performance as many as 7 people (19.4%). Whereas 45 health workers stated that there were 3 people in punishment (6.7%) who had poor performance and 42 people (93.3%). The results of the chi square test obtained p-value = 0.000 <0.05. This means that there is a punishment effect on the performance of health workers at Sentani Health Center. When viewed from the value of RP = 12,083; CI95% = (4,002 - 36,480) which was interpreted that health workers stated that there was no punishment at the risk of having a performance less than 12,083 times higher than the health workers who were punished.

g. Influence of leadership of the puskesmas head on the performance of health workers

Table 7. The influence of the leadership of the puskesmas head on the performance of health workers at Sentani Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Leadership of the puskesmas head</th>
<th>Performance</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less</td>
<td>Good</td>
</tr>
<tr>
<td>1</td>
<td>Less</td>
<td>21</td>
<td>61.8</td>
</tr>
<tr>
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<td>Good</td>
<td>11</td>
<td>23.4</td>
</tr>
<tr>
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<td></td>
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</table>

*p-value = 0.001; RP = 2,639; CI95% = (1,476 - 4,718)
Based on Table 7, it shows that out of 34 health workers with the leadership of the Head of the Health Center lacking as many as 21 people (61.8%) had less and good performance as many as 13 people (38.2%). While from 47 health workers whose leadership of the Head of a good Puskesmas as many as 11 people (23.4%) had less performance and good as many as 36 people (76.6%). The results of the chi-square test obtained p-value = 0.001 <0.05. This means that there is influence of the leadership of the puskesmas head on the performance at Sentani Health Center. When viewed from the value of RP = 2.639; CI95% = (1.476 - 4.718) interpreted that health workers who have a less risky leadership style have less performance 2,639 times higher than health workers who state good leadership.

4. DISCUSSION
4.1. Effect of age on the performance of health workers

The results showed that there was no effect of age on the performance of health workers in Sentani Health Center (p-value = 1.000). The results of this study are in line with the research conducted by Barata (2013) in Puskesmas in Gianyar Regency that age does not have a significant relationship with the performance of officers. The age factor can affect one's physical and psychological strength and at a certain age an employee will experience changes in work potential. Senior employees tend to be satisfied with their work because they are better able to adapt to the environment based on their experience. They tend to be more emotionally stable, so that overall they can work more smoothly and regularly.

Age is the span of life span from birth and age (Handayani, 2010). Age will affect a person's physical condition, enthusiasm, burden and responsibility both in work and in daily life. For health workers who are less than 30 years old, despite having good physical condition, to carry out physical activities but in general they have a relatively less sense of responsibility compared to those aged ≥ 30 years (Sandra, 2013).

The results of the analysis showed that the health workers who were <30 years old as many as 19 people (38.8%) had poor and good performance as many as 30 people (61.2%). Whereas from 32 people aged health workers >30 years as many as 13 people (40.6%) had less performance and good as many as 19 people (59.4%). This shows that the age of health workers aged <30 years and >30 years has equal opportunities for good or less performance. The absence of influence can be due to other factors that affect the performance of health workers not because of the physical age of health workers, but the environment in the health center such as the existence of rewards, so that health workers are not satisfied in work that affects the performance of health workers. Judging from the age limit of health workers aged >30 years the oldest is 47 years old and the youngest is 23 years old, so that physically does not affect the performance of health workers who are still in their productive age. The average health worker aged <30 years is a health worker with an employee honor status or contract, so that health workers will compete to create good performance so that they can be considered and become a priority in receiving civil servants. The same thing was done by health workers aged >30 years, most of whom were civil servants and had an influence on satisfaction and motivation for career divisions that were both good and equal - they were at risk of having good performance, so they did not affect performance.

This is in accordance with the theory proposed by Gibson (2003), that age has an indirect effect on individual behavior and performance. The older a person is, not necessarily able to show intellectual maturity both cognitively and psychomotor when doing work. This is probably due to the personal values of the individual.
concerned, flexibility and other psychological factors that influence.

4.2. Effect of tenure on the performance of health workers

The results showed that there was no effect on the work period on the performance of health workers in the Sentani Health Center (p-value = 0.414). The results of the same study were put forward by Lutiarai (2013) in Semarang Regency, which states that years of work have no relationship with performance. Likewise the results obtained by Samsualam, Indar, & Syafar (2008) in Makassar state that there is no significant relationship between years of service and performance.

According to Robbins (2006) a person's tenure shows the level of seniority. Where the level of seniority is an expression of work experience. According to Sandra (2013), the longer a person's work experience, the more skilled the officer is, it is easy to understand their duties and responsibilities, thus providing an opportunity for achievement. The results of the analysis showed that the health workers who consisted of 31 health workers with a new tenure of 10 people (32.3%) had less and good performance as many as 21 people (67.7%). While of the 50 health workers who had a long working period of 22 people (44%) had poor and good performance as many as 28 people (56%). This shows that the working period of new and old health workers is equally at risk of having poor performance.

The absence of influence on the working period on the performance of health workers can be influenced by the existence of a reward or award given. Health workers who are not satisfied, especially health workers who have long worked, can affect performance. On the other hand, new health personnel, but feel satisfied with the work they get so they feel comfortable in their work which can improve performance. So that satisfaction in work is not influenced by the work period of health workers.

Past behavior that has become accustomed to behaving discipline and enthusiasm in working according to the process will most likely continue to behave accordingly in the future, and vice versa. So that it can be concluded that the old and new working periods expressed in work experience do not necessarily guarantee good performance if they are used to behaving inappropriately.

4.3. Effect of motivation on the performance of Health Workers

The results showed that there was no significant effect of motivation on the performance of health workers in Sentani Health Center (p-value = 0.100). However, low work motivation has a chance of performance that is less than 1.709 times higher than health workers who have high work motivation. The results of this study are in line with the Beratha study (2013) in the Gianyar District Health Center that there was an effect of motivation on the performance of health workers. Motivation is an act of a group of factors that cause individuals to behave in certain ways (Herlambang, 2012). Motivation teaches how to encourage subordinate work morale so that they want to work harder and work hard by using all their abilities and skills to be able to advance and achieve company goals. While the motivation is the driving force that results in an organization member willing and willing to time to organize various activities into his responsibility and fulfill his obligations in the number of achievement of goals and various organizational goals that have been determined previously (Siagian, 2010).

4.4 Statement of respondents about motivation in working with low motivation that each work or provide services to patients must require colleagues. This causes the independence of health workers to decrease. In other words, health workers have a high morale when they are equal to other health care colleagues. In addition, health workers do not feel proud of the
results of services that get appreciation from leaders or co-workers. This shows that the motivation of health workers seems to have other needs that must be considered by the health center management. While health workers who have high motivation are caused by always trying various alternatives to achieve success, good cooperation among friends encourages to work hard so that they can complete good work, make plans to achieve success, if they have difficulty doing something more like to try hard to finish it, feel satisfied when you get the best results and if it works well. In addition, health workers are confident in my ability to work well and provide services to patients quickly and try to be responsible for the work seriously to prepare themselves to face the challenges of work and get a promotion. This shows that health workers have the motivation to actualize.

Self-actualization is related to the process of developing one's true potential. The need to show the ability, expertise and potential of someone. Self-actualization needs have a potential tendency that increases because people actualize their behavior. A person who is dominated by the need for self-actualization likes tasks that challenge his abilities and expertise (Sofyandi and Garniwa, 2007). The results of the analysis showed that low motivation health workers were 11 people (57.9%) who had less performance and good as many as 8 people (42.1%). 21 highly motivated health workers (33.9%) had poor and good performance as many as 41 people (66.1%). This shows that health workers who are highly motivated have a higher proportion of performance. The prevalence ratio test results obtained that health workers who have low motivation are at risk of having a performance that is less than 1.709 times higher than those of health workers who are highly motivated.

The influence of motivation on the performance of health workers is due to the fact that health workers do their jobs well in the hope that they can fulfill their needs through promotion, so that they compete or compete in obtaining promotions that affect the incentives or compensation they receive.

4.5. Effect of work discipline on the performance of health workers

The results showed that there was an influence of work discipline on the performance of health workers in Sentani Health Center (p-value = 0.003). The results of this study are in line with Salam's (2013) research at the Wara Selatan Health Center in Palopo City which revealed that the influence of work discipline on the performance of health workers. Hasibuan (2010) argues that discipline is the awareness and willingness of someone to obey all applicable company regulations and social norms. Based on the above understanding it can be concluded that work discipline is an attitude, behavior, and action that is in accordance with both written and unwritten rules, and if it violates there will be sanctions for violations. The respondent's statement about discipline is the lowest - the average return from work does not match the predetermined time, does not complete the task in accordance with a predetermined time and does not carry out the boss's orders properly.

According to Simamora (2012) discipline is a procedure that corrects or punishes subordinates for violating regulations or procedures. Work discipline is a tool used by managers to communicate with employees so that they are willing to change behavior and as an effort to increase one's awareness and willingness to comply with all applicable company regulations and social norms (Rivai, 2010).

The results of the analysis showed that there were 19 health workers (61.3%) who were underperforming and 12 were good (38.7%). Health workers with good work discipline as many as 13 people (26%) had poor and good performance as many as 37 people (74%). This shows that the health workers who are working are getting higher and better performance. This is evidenced from the results of the prevalence ratio test that health workers who have less work
discipline are at risk of having a performance less than 2,357 times higher than health workers who have good work discipline. Observations of researchers that the work discipline of health workers is influenced by employee morale, the level of compensation provided, thus affecting employee job satisfaction. Health workers who feel dissatisfied with the results of work with compensation provided, so they are not disciplined or comply with the rules set. To obtain the work discipline needed in the decision-making process, leaders can conduct discussions with subordinates so that problems that exist within the puskesmas and alternative actions can be identified. Leadership applied in decision making must be more flexible, because inappropriate decisions will invite risk. The risk needs to be considered more deeply, especially when decision makers will determine their decisions that have possibilities that must be achieved in the future.

4.6. Effect of rewards on the performance of Health Workers

The results showed that there was an effect of reward on performance in Sentani Health Center (p-value = 0.020). In line with the results of the Beratha study (2013), it was revealed that reward has an influence on the performance of health workers. According to Handoko (2010) Reward is a form of appreciation for businesses to get a professional workforce in accordance with the demands of a position that requires a balanced coaching, namely an effort to plan, organize, use, and maintain labor so that they can carry out tasks effectively and efficiently. As a concrete step in the results of coaching, rewards are given for employees who have shown good work performance.

Most health workers who feel they are lacking in the rewards state that health workers will be better at work if there are more incentives that I receive and feel very happy when given the task beyond the standard. Furthermore, health workers also stated that some health workers were less involved because they felt they did not have authority over delegated tasks and prevented health workers from participating in the activities of the health professionals' professional organizations.

While health workers who feel good about the rewards given do new things related to work, feel given the opportunity to increase career paths and provide feedback about professional health issues. In addition, the guardian stated that the promotion was regulated in a fair regulation and given the same opportunity.

The results of the analysis obtained that health workers with no reward as many as 27 people (49.1%) had less and good performance as many as 28 people (50.9%). Health workers who have rewards as many as 5 people (19.2%) have less and good performance as many as 21 people (80.8%). This indicates that a lack of reward reduces the performance of health workers. The prevalence ratio test results obtained by health workers who did not have a risky reward had a performance that was less than 2,553 times higher than the health workers who were rewarded.

The influence of less reward given by management can reduce the performance of health workers. This shows that the Puskesmas leadership does not respect the contribution of health workers, especially health workers with honor status / contracts, so health workers have a feeling of unhappiness at work. This feeling of unhappiness creates a sense of indifference towards health workers in the puskesmas who feel they are not part of the place where they work, so that the performance of health workers decreases. Shown with low work responsibilities. To be able to improve the performance of health workers, it is necessary to make financial and non-financial compensation for health workers in contract / compensatory health personnel who are still perceived to be less than what is achieved.
4.7. Effect of punishment on the performance of Health Workers

The results of the study showed that there was an effect of punishment on performance in Sentani Health Center (p-value = 0.000). The results of this study are in line with the research conducted by Salam (2013) at the Wara Selatan Community Health Center, Palopo City, which revealed that there was an effect of punishment on the performance of health workers. Punishment is a threat of punishment which aims to improve employee offenders, maintain applicable regulations and provide lessons to offenders "(Mangkunegara, 2010). Basically the purpose of punishment is so that employees who violate feel deterred and will not repeat again. Respondents' statements about punishment were felt that health workers felt they were not reprimanded for completing their assignments on time because they were reprimanded by their superiors and did not get suspended for making mistakes. While good punishment says getting a reprimand from the boss for coming late and feeling ashamed of other health workers because they get a warning from their superiors and try to improve my performance after getting a suspension. This shows that health workers who get punishment in the form of sanctions or penalties from the leadership increasingly enthusiasm in work.

The results of the analysis showed that health workers did not get punishment as many as 29 people (80.6%) had less and good performance as many as 7 people (19.4%). Health workers who received punishment as many as 3 people (6.7%) had less and good performance as many as 42 people (93.3%). This shows that the better punishment increases the better performance of health workers. This is evidenced by the results of the prevalence ratio test that health workers who are not punished are at risk of having a poor performance of 12,273 times higher than health workers who are punished.

The influence of punishment on improving employee performance is caused by an unpleasant act in the form of punishment or sanction given to health workers consciously when a violation occurs so as not to repeat it. This can be an incentive tool for employees to improve their performance.

4.8. Influence of leadership of the puskesmas head on the performance of health workers.

The results of the study showed that there was an influence of the leadership of the puskesmas head on the performance at Sentani Health Center (p-value = 0.001). The results of this study are in line with the research conducted by Salam (2013) at the Wara Selatan Health Center in Palopo City, revealing that there was an influence of leadership style on the performance of health workers. According to Tjiptono (2006) leadership style is a way used by leaders in interacting with their subordinates. Meanwhile, another opinion states that leadership style is a pattern of behavior (words and actions) of a leader perceived by others (Hersey, 2004). Leadership style is the behavior or method chosen and used by leaders in influencing the thoughts, feelings, attitudes and behavior of the members of their subordinate organizations (Nawawi, 2011). Respondents' statements about leadership style are lacking, because the director does not provide examples that can increase interest in work and does not support subordinates' efforts to solve every work problem and does not use a positive personal approach with subordinates in carrying out tasks and does not encourage the need for group work in completing work. This shows that the Head of the Puskesmas Sentani lacks interaction or communication with his subordinates, including the problems faced. This can be caused by the director taking over the leadership of the head of the puskesmas, but it is still felt to be unsatisfied by health workers, because the aspirations or problems cannot be
resolved without the intervention of the director.

The statement of the respondents stating that the leadership style is well retained mostly tells the subordinates the details of the work through standard operating procedures for how the work must be completed. The Director also incidentally supervises the execution of subordinate duties and provides direction in accordance with his command line. The results of the analysis showed that the health workers with the leadership of the Head of the Health Center were less than 21 people (61.8%) had less and good performance as many as 13 people (38.2%). Health workers with the leadership of the Head of a good Puskesmas as many as 11 people (23.4%) had poor performance and 36 people (76.6%). This shows that better leadership by the Head of the Community Health Center can improve the performance of health workers in a high way. This is evident from the results of the prevalence ratio test that the leadership style is less noisy has less performance 2.639 times higher than the health workers who state good leadership.

From the results of this study it can be seen that, health workers who are given high support and two-way communication occurs between leaders and health workers in problem solving, the performance of health workers will be better. As with health workers who do not interact enough so that delegates or leadership cannot felt directly by health workers in improving their performance. Conversely, health workers who often interact feel cared for by the leadership, so that all actions or work carried out are considered or supervised by the leadership, thereby increasing the morale of the health workforce.

5. CONCLUSIONS
The results of this study can be summarized as follows:
1. There is no influence of age on the performance of health workers in Sentani Health Center (p-value = 1,000; RP = 0.954; CI95% = 0.552 - 1,649).
2. There is no influence on the working period on the performance of health workers in Sentani Health Center (p-value = 0.414; RP = 0.733; CI95% = (0.403 - 1.334).
3. There is no effect of motivation on the performance of health workers in Sentani Health Center (p-value = 0.108; RP = 1.709; CI95% = 1.019 - 2.868).
4. There is the influence of work discipline on the performance of health workers in Sentani Health Center (p-value = 0.003; RP = 2.357; CI95% = 1.367 - 4.065)
5. There is an effect of reward on the performance of health workers in Sentani Health Center (p-value = 0.020; RP = 2.553; CI95% = 1.110 - 5.869)
6. There is an effect of punishment on the performance of health workers in Sentani Health Center (p-value = 0.000; RP = 12.083; CI95% = 4,002 - 36,480)
7. There is the influence of the leadership of the puskesmas head on the performance in Sentani Health Center (p-value = 0.001; RP = 2.639; CI95% = 1,476 - 4,718)

REFERENCES
- Bertha Kamo, Yermia Msen, A.L. Rantetampong, Anwar Mallongi, 2018, The Factors affecting with Four Visited at Public Health Centre Sub Province Mimika Papuan
Yarinus Jikwa et.al. The Factors Affecting of Health Employee at Public Health Centre, Sentani Sub Province Jayapura

- Luthans, Fred (2006). Perilaku Organisasi.jilid 10, Jogjakarta. ANDI, h. 557
Yarinus Jikwa et.al. The Factors Affecting of Health Employee at Public Health Centre, Sentani Sub Province Jayapura

- Sigit (2010) Pengaruh Fungsi Pengarahan Kepala Ruang dan Ketua Tim Terhadap Kepuasan Kerja Perawat Pelaksana di RSUD Blambangan Banyuwangi. Unit Bedah Saraf, THT, Mata RSD Dr Soebandi Jember e-mail: sugihartosigit@yahoo.com; sugihartosigit@gmail.com. diakses 10 September 2017.
- Sugijati, Sajidah dan Dramawan (2013) Proses Pembelajaran Dalam Pendidikan

Evaluation of Health Services in Class II Prioned Abepura on Year 2017 Papua Province

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ABSTRACT

Background: Prisoned prisoners who were detained and lost their freedom of rights and obtained the right to health services in the Polyclinic of Class II Abepura and had never been evaluated for the existing health services. Research Objectives: Evaluating health services in the Class II A Abepura Penitentiary of Papua Province in 2017. Research Method: Descriptive qualitative and conducting interviews with 3 main informants and 3 supporting informants from the assisted residents as well as observing health service facilities and infrastructures at the Abepura Class II A Correctional Institution and analyzed qualitatively. Results: Health human resources in Abepura Class II A Prison were staff for handling general illnesses and nursing. The availability of facilities and infrastructures is sufficient in nursing services and medicines. Health service funding is sourced from DIPA funds in health services for assisted citizens, and inadequate for the needs of the assisted citizens in fulfilling the personal hygiene and nutrition of the assisted citizens. While health financing works in collaboration with the Jayapura City Health Office, the Puskesmas and Abepura Hospital and Jayapura Regional Hospital. Class II A Abepura Prison partners with health centers and hospitals in health checks that cannot be served in polyclinic Health service efforts carried out in health services are satisfied but dental services and mental disorders. While other health efforts include fairly good promotive efforts, preventive measures are not optimal in meeting personal hygiene and nutrition as well as follow-up care in examinations due to the limitations of health workers.

Keywords: Evaluation, Health Service, Prison, Prioned Class II A, Abepura

1. INTRODUCTION

According to the International Center for Prison studies the number of assisted citizens in the world in 2017 (6,296,179). People in prison experience a higher level of illness and 80% of illnesses are tuberculosis, hepatitis C, HIV / AIDS, mental health problems, drug use and substance use disorders. Conditions inside prison walls, such as population density and malnutrition, further aggravate the spread of disease (WHO, 2018). Disease factors are the main cause of the high mortality rate of prisoners and prisoners in prisons in Indonesia. The percentage is 47.5 percent in 2016 and 60.25 percent in 2017. The total number of deaths of prisoners and prisoners in 2016 was 120 cases, while in 2017 there were 83 cases. In 2017 the highest morbidity rate was due to respiratory problems (19.3%), combined disease (complications) 5%, diabetes mellitus (2%), leptospirosis (2%) and strokes, stomach, kidney pain, brain inflammation, cancer, epilepsy and diarrhea (7%) and unclear 20% (LBH, 2017).

Improving the health and safety of prisoners means to prove that in LAPAS it is necessary to pay attention to prisoners' health as a whole, otherwise it will create a danger for officers and prisoners because these violations will have an adverse effect. Over capacity is also one of the dilemmas that occur within the Penitentiary, as a result of the increase in the number of residents,
then the average Penitentiary in Indonesia experiences over capacity, the overcapacity that occurs will certainly result in a problem of lack of services in the health sector for prisoners within the Penitentiary. The density of residents in LAPAS has increased, resulting in rooms that should be sufficient to accommodate prisoners to be accommodated no longer, not only that, health services for the assisted residents are also not optimally implemented.

Health care efforts are every activity to maintain and improve health carried out by the government and the community. This means that improving health, whether individuals, groups or communities must be sought. The effort to realize health can be seen from two aspects, namely curative healing and rehabilitative health. While improving health includes 2 aspects, namely: preventive disease (preventive) and health improvement (promotive) (RI Ministry of Health, 2015). Based on the Government Regulation of the Republic of Indonesia Number 32 of 1999 concerning the conditions and procedures for the implementation of the rights of prisoners, health services are promotive, preventive, curative, and rehabilitative efforts in the health sector for prisoners and prisoners in prisons.

The role of the government in health services for the assisted citizens can be seen in Law No. 32 of 1999 Article 14 states that every prisoner and correctional student has the right to receive proper health services, each policlinic and its facilities are provided and provided at least one doctor and another health worker.

Research conducted by Sumenda (2015) in Kotamobagu City Class II B Health Clinic for the implementation of health services in detention centers has not run optimally seen from the services provided to prisoners due to various factors such as lack of health workers and limited health equipment and medicines. From the research of Hasrudin (2017) who analyzed the Implementation of Correctional Services Standards for Residents (Studies in Class II A Kendari Penitentiary Institutions), where the implementation of standard services for prisoners in class II A Kendari Correctional Institutions has not been carried out in accordance with the provisions of statutory regulations - valid invitation.

Based on a preliminary study at the Abepura class II A penitentiary on March 6, 2018, around 673 residents were built from a capacity of 600 people and over capacity was 12%. Health problems of assisted residents in prisons in the month of 2017, the highest number of diseases recorded were ARI, Cefalgia, Observation of Febris, Arthritis and Dermatitis (2017 Clinical Prison). The number of medical personnel in the Abepura Penitentiary Institution class II A is 5 people, consisting of 1 doctor and 4 nurses. Fulfillment of health services, Directorate General of Ministry of Law and Human Rights issued Decision Number PAS-32.PK.01.07.01 of 2016 concerning clinical guidelines on health service standards for assisted citizens covering the availability of human resources, facilities, infrastructure, implementation costs and health checks. One of the findings at the Abepura Penitentiary Polyclinic.

The preliminary study in July 2018 was based on information from interview data on 8 prison staff who were treated to complain about the services they received, so that the services they received were not as expected. The complaint expressed was the response of officers who were slow in serving patients, so that the inmates had to wait around 1-2 hours to get service. Complaints in the quality of health services revealed are the lack of existing health facilities. The results of the observation, it appears that medical devices are inadequate such as scissors, nierbeke, tweezers, hetecting tools, plaster and bandages which are standard tools that must be possessed by polyclinics and inadequate medicines, thus affecting the services provided to the inmates. The problems that exist from the observation that in the organizational structure there is no unit in charge of health at Kemenkumham Jayapura, so that the
obstacles experienced by officers or medical personnel to health service facilities and infrastructure are constrained in fulfilling health services to the assisted citizens. Based on this, the researcher was interested in conducting a study entitled "Evaluation of Health Services at the Papua Province Penitentiary in 2017"

2. MATERIALS AND RESEARCH

2.1. Type of Research

This type of research is qualitative descriptive research. Syaodih (2008) states that descriptive research is the most basic form of research. Aimed at natural or human engineering conditions. According to Syaodih (2008) in Pongtiku, et al (2016) that qualitative research is a study aimed at describing and analyzing phenomena, events, social activities, attitudes, beliefs, perceptions, thoughts of individuals individually and in groups ". This type of research is qualitative with a case study approach, which is a method of research conducted with the aim of describing the problem that occurs to conclude the image objectively (Swarjana, 2013).

The focus on research to understand the evaluation of health services at the Papua Province Penitentiary in 2017 reflects the availability of human resources, facilities, infrastructure, education and training, funding and health services.

2.2. Place and Time of Research

1. Research Place

This research was conducted at Abepura Class II Correctional Institution

2. Research Time

This research was conducted in November 2018.

3. Informant

The selection of informants is done by using a snowball sampling technique, namely the selection of sampling based on the involvement of informants who know the problem clearly, can be trusted to be a good source of data and able to express opinions well and correctly (Swarjana, 2013). Informants are sources of information that knows for certain events or events related to research variables including the availability of human resources, facilities, infrastructure, education and training, funding and health services. The number of main informants obtained was 3 informants, namely 1 person Head of Class II A Abepura Prison, 1 person Kasie Binadik, 1 health officer and supporting informants of 3 assisted citizens.

3. RESULTS

Karakteristik Informan

<table>
<thead>
<tr>
<th>Tabel 1. Main Informan</th>
<th>Inisial Informan</th>
<th>Age (year)</th>
<th>Sex</th>
<th>Education</th>
<th>Work period</th>
<th>Position</th>
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<td>1</td>
<td>KR</td>
<td>48</td>
<td>Man</td>
<td>S1 law</td>
<td>25</td>
<td>Ka. Lapas claa II Abepura</td>
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<tr>
<td>2</td>
<td>TS</td>
<td>44</td>
<td>Man</td>
<td>S1 law</td>
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<td>Kasie Binadik Lapas claa II Abepura</td>
</tr>
<tr>
<td>3</td>
<td>RT</td>
<td>36</td>
<td>Woman</td>
<td>D-III nurse + SKM</td>
<td>15</td>
<td>Security</td>
</tr>
</tbody>
</table>

The main informants in this study were 5 people, of which 4 were educated in law and 1 was a health worker who was educated in D-III Nursing and a public health graduate.

The supporting informants in this study were the assisted citizens with the following data

<table>
<thead>
<tr>
<th>Table 2. Supporting Informant</th>
<th>Inisial Informan</th>
<th>Age (year)</th>
<th>Sex</th>
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<th>Prioned period</th>
<th>Time of prisoned</th>
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<td>Man</td>
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<td>AM</td>
<td>29</td>
<td>Man</td>
<td>Senior high school</td>
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<td>2</td>
</tr>
<tr>
<td>3</td>
<td>RO</td>
<td>33</td>
<td>Man</td>
<td>Senior high school</td>
<td>4</td>
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</tr>
</tbody>
</table>
Supporting informants as many as 3 people were male and had undergone tenure of 1-2 years and received health services for 3 times.

2. The capacity of human resources in health services to the assisted citizens at the Penitentiary

Health human resources are the order that collects various efforts in planning, education and training and the utilization of health workers in an integrated and mutually supportive manner, in order to ensure the achievement of the highest degree of public health. As implementers of health efforts, it is necessary to have adequate human health resources in number, type and quality, and to be distributed fairly and evenly, according to the demands of health development needs. Health services for prisoners in prisons must be supported by the availability of adequate health personnel in terms of number, type and quality that need to be adjusted to the number of prisoners being fostered, because health services in prisons without adequate health support will not work optimally.

Prisoners are entitled to the availability of health workers in prisons as confirmed by Article 14 of the Government Regulation Number 32 of 1999 concerning the Terms and Procedures for the Implementation of Guidance for Citizens who mention that; each Lapas is provided at least one doctor and another health worker.

Health services for detainees or inmates as many as 1 polyclinic are located in a prison. The number of medical personnel in the Abepura Class II A Polyclinic can be seen in table below.

<table>
<thead>
<tr>
<th>No</th>
<th>Profession</th>
<th>Number of worker</th>
<th>Competence worker</th>
<th>Oject</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Medical Doctor</td>
<td>1 person</td>
<td>Medical doctor</td>
<td>Service for general</td>
</tr>
<tr>
<td>2</td>
<td>Dental doctor</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Nurse</td>
<td>4 person</td>
<td>D-III Keperawatan</td>
<td>Service for general</td>
</tr>
<tr>
<td>4</td>
<td>Teeth treatment</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Nursery</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Assisten Apoteker</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Analist Laboratorium</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Psikolog</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Sanitarian</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Nutrisionist</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Administrator</td>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above data between health workers available in the Class IIA Jayapura Prison both from the Number and Classification, where the number of health workers in Abepura Class IIA Prison was dominated by nurses, amounting to four people and only one doctor.

The results of the interview show that informants, especially health workers, find it difficult to cure without going through a laboratory examination diagnosis, so that the handling of health services is given in the form of treatment and treatment of common diseases.

Table 3. Number of Workers at Abepura Class II A Correctional Institution Polyclinic in 2018

The data above shows that diseases are the most a lot suffered by Prisoners in Abepura Class IIA Prison is Skin diseases or scabies as many as 52 people, diseases This scabies is an infectious disease of the skin caused by fleas and most easily infect the environment or residential rooms damp and dense and
poor personal hygiene. Data on patient visits at the Abepura Prison Polyclinic in November 2018 if averaged 8 to 9 people per day.

3. Efforts for Health Services for Assisted Citizens in Abepura Class II A Prison

Health care efforts are an order that collects various efforts to provide health services to both the community and individuals in an integrated and mutually supportive manner to ensure the achievement of a high degree of health. These health efforts include; education (promotive), prevention (preventive), treatment (Curative) and recovery (rehabilitative) (Notoatmodjo, 2010). Based on the distribution of questionnaires to 20 inmates who had previously received health services about satisfaction with health services provided by Abepura Class II A prison can be seen in table 5.

Table 5. Satisfaction of Assisted Citizens Against Health Services

<table>
<thead>
<tr>
<th>No</th>
<th>Satisfaction level</th>
<th>Answer</th>
<th>SP</th>
<th>P</th>
<th>TP</th>
<th>STP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How is the response of health workers with patient disease complaints</td>
<td>4</td>
<td>20</td>
<td>15</td>
<td>75</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>What about periodic health checks on assisted citizens</td>
<td>7</td>
<td>35</td>
<td>11</td>
<td>55</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>What is the response of health workers to the inmates in a sick cell room</td>
<td>3</td>
<td>15</td>
<td>15</td>
<td>75</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>How to assist health workers when referring to and being treated outside prison</td>
<td>5</td>
<td>25</td>
<td>14</td>
<td>70</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>What about the availability of drugs if sick</td>
<td>8</td>
<td>40</td>
<td>11</td>
<td>55</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>What about the administrative costs at the polyclinic</td>
<td>6</td>
<td>30</td>
<td>0</td>
<td>45</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>What about the services provided by each patient</td>
<td>4</td>
<td>20</td>
<td>11</td>
<td>55</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>What about the completeness of equipment in the polyclinic</td>
<td>3</td>
<td>15</td>
<td>13</td>
<td>65</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>What about dental services</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>How to handle the inmates who have mental disorders</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>11</td>
<td>How to handle the assisted people who experience sexually transmitted diseases</td>
<td>5</td>
<td>25</td>
<td>12</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>What about the cleanliness of the room and the equipment used</td>
<td>10</td>
<td>50</td>
<td>9</td>
<td>45</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>What about transportation provided for reference</td>
<td>3</td>
<td>15</td>
<td>15</td>
<td>75</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 5 shows that generally the inmates are very satisfied and satisfied with the services provided, but respond to dissatisfaction and are very dissatisfied with dental services and the handling of assisted people with mental disorders. This is due to the absence of doctors and dental nurses as well as psychology doctors in the handling of prisoners who experience mental disorders or psychiatric screening. In addition, the assisted people who have mental disorders because there is no examination, so that the inmates who experience severe mental disorders will be referred to, while the other assisted people mingle with the inmates who might partially experience mental disorders. This can be risky if inmates who experience mental disorders with violent behavior that can threaten the safety of other assisted citizens.

Prisoners are entitled to the availability, access and acceptance of health service efforts at the Penal Institution as mandated in the 1945 Republic of Indonesia’s Basic Law (UUD) resulting from the amendment to the second amendment to Article 28 H paragraph (1), stating that everyone has the right to health services. In Law Number 36 of 2009 concerning Health Article 2 affirms that health is a human right and one of the elements of welfare that must be realized in accordance with the aspirations of the Indonesian nation as referred to in Pancasila and the 1945 Constitution of the Republic of Indonesia, and Health development is carried out based on humanity, balance, benefits, protection, respect for rights and obligations, justice, gender and non-discrimination and religious norms, Article 4 emphasizes that everyone has the right to health, Article 5 every person has the same right to obtain access at as resources in the health sector, and Article 6 affirms that everyone has the right to obtain safe, quality and affordable health services.

4. CONCLUSION

Based on the results of the study concluded as follows:
1. Health human resources in Abepura Class II A Prison are personnel for handling general illnesses and nursing and there are no dentists, dental nurses, assistant pharmacists, laboratory analysts, psychologists, sanitarians, nutritionists and administrators.

2. Availability of facilities and infrastructures is sufficient in nursing services and medicines for the assisted citizens, but health checks cannot be carried out because there is not enough equipment available.

3. Financing health services sourced from DIPA funds in health services for assisted citizens, and inadequate for the needs of the assisted citizens in fulfilling the personal hygiene and nutrition of the assisted citizens. While health financing works in collaboration with the Jayapura City Health Office, the Puskesmas and Abepura Hospital and Jayapura Regional Hospital.

4. Class II A Abepura prisons partnered with puskesmas and hospitals in medical examinations that cannot be served at the clinic.

5. Efforts to provide health services for waarga assisted in health services are satisfied except dental services and mental disorders. While other health efforts include fairly good promotive efforts, preventive measures are not optimal in meeting personal hygiene and nutrition as well as follow-up care in examinations due to the limitations of health workers.

REFERENCES

- Kementerian Hukum dan Hak Asasi Manusia RI 2017. Strategi penanggulangan tuberkulosis pada lembaga pemasyarakatan dan rumah tahanan negara di Indonesia. Jakarta
Hidayatu Samawiyah et al. Evaluation of Health Services in Class II Prisoned Abepura on Year 2017 Papua Province


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Globalization and Management Innovation in the Sulawesi Province Hospital of South 2012: A Case Study

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ABSTRACT

General Hajj Hospital South Sulawesi is the only hospital owned by a local government to make changes in order to improve the quality of one of them by implementing a quality management system ISO 9001:2008. However, when viewed from some performance indicators that have been achieved have not shown the maximum results. This study aims to find out why the changes in implementing the ISO 9001:2008 quality management in General Hajj Hospital South Sulawesi not achieve optimal results. This study was conducted in General Hajj Hospital South Sulawesi. The method used in this research is a qualitative study: case study using in-depth interviews (depth interviews) against those involved in the implementation process of ISO 9001:2008 in General Hajj Hospital South Sulawesi. The samples in this study using key informants were 19 informants. Results from in-depth interviews were analyzed using techniques informant qualitative content analysis. The results showed that at this stage learn the basics of the changes made and initiated by the desire driven leaders (top down) who saw an urgent condition and need thorough repairs. Socialization goals change and the impact of the change is still lacking, not to the lower level. The role of change agent, supporting the support and involvement of stakeholders is still lacking. The reward in an effort to consolidate the perceived change is still lacking. Concluded that changes made in South Sulawesi Province Hospital Haji not achieve optimal results because they do not implement the nine stages of change management as a whole.

Keywords: Change Management.

INTRODUCTION

At the beginning of the 21st century it shows a paradigm shift from the traditional public administration model (old public administration) which is so dominant in the 20th century towards managerialism or public management that focuses on customer service. This shift in paradigm has an impact on the entire public service sector, including the hospital sector (Denhardt, et al., 2007). Organizing a hospital with a BLU / BLUD pattern as one aspect of public service as stipulated in Law 25/2009 adhering to the principle of public accountability implies that every hospital in providing services to the community must have measurable performance and quality standards. So that every hospital should make changes and transformations from traditional management patterns (old public management) towards management with modern business principles that focus on aspects of improving service quality as public accountability (accountability).

Changes made by the Haji Regional Hospital in South Sulawesi Province with the implementation of the ISO 9001: 2008 quality management system are certainly expected to improve the performance and quality of services promised so that it has an impact on patient satisfaction and will ultimately increase customer loyalty as reflected in the increase in visits. But this has not shown optimal results when viewed from the outpatient visit data showing a fluctuating trend. Ironically, this condition happened to coincide with a year after the Makassar Hajj Hospital implemented an
ISO 9001: 2008 quality management program. This is certainly inversely proportional to the goals and impacts expected from the implementation of the quality management system itself as one of the efforts to change. The success of a change is largely determined by how the stages of the change management process are carried out (Newton, 2007). The most frequent and prominent problem is the rejection of change itself (resistance to change). To reduce the impact of the rejection of a change in adopting a new system it is necessary to manage change through a change management process approach. The change management plan will fail if it is not supported by the main sponsor; usually the sponsor is the organization's senior management. Organizational stakeholders must accept that such changes are seen as natural for organizations and customers will respond positively to those changes. There are a number of reasons for change, through small flows due to lagging from the other or the need for change that appears on a larger scale through evolution or revolution (Burthonshaw et al., 2011).

Base on the study from Pare, et al. (2011) to find out the clinicians' perceptions of organizational readiness for changes in the context of clinical information system implementation explained that the accuracy of change, organizational flexibility, vision clarity, and the presence of change agents help explain 75% of the organization's readiness for change. Furthermore, organizational readiness is the key to the involvement of the clinician's initial support for clinical information system implementation initiatives. Likewise in a qualitative study conducted by Baltzer, et al. (2012), concluded that a promising area for future research and improvement in change management must involve employees in a structured manner in planning organizational change, and developing methods to avoid high working conditions. irregular.

In order for changes to be well received, they must be managed properly through the stages of change management. The initial stage in making changes is to learn the basics by identifying crises, possible crises, or big opportunities, understanding the sources of change, reasons for change, scope of change and the impact of change (Newton, 2007). The process of managing communication plays an important role in achieving successful implementation of change programs (Aladwani, 2001). The purpose of the study was to analyze and describe the stages of change management and resistance factors to change in the Hajj Hospital in South Sulawesi Province.

2. MATERIALS AND METHODS

2.1 Types of research

This type of research is a case study (Case Study) with a nine stage change management approach from Newton, which seeks to explore the stages of change management in implementing the ISO 9001: 2008 quality management system in the Hajj Hospital in South Sulawesi Province. It is called a case study because this study attempts to explain the phenomenon, the facts of the case, and the conclusions of the events based on facts (Yin, 1981); (Green, et al., 2009); (Gray, et al., 2012).

2.2 Research Approach and Research Design

This study uses a qualitative approach. According to Green and Thorogood (2009) qualitative research was built to understand phenomena from the perspective of participants rather than from researchers. The design of the study is the stages of change management in implementing the ISO 9001: 2008 quality management system in the Hajj Regional Hospital in South Sulawesi Province with the design of a case study.

2.3 Research Time and Research Location

This research was conducted from July to August 2012 at the Hajj Regional General Hospital of South Sulawesi.
Province. The selection of the Haji Regional Hospital in South Sulawesi Province was the place of research because it was the only local government-owned hospital that had implemented the ISO 9002: 2008 quality management system and successfully obtained ISO 9002: 2008, ISO 18001: 2007 (OHSAS), ISO 14001: 2004 certification since July 2012. Informant The sampling technique that will be used as an informant in this study uses purposive sampling. The informants in this study were using key informants (key informants). Key informants (key informants) are participant taking techniques as a source of data with the consideration that the person is considered the most knowledgeable about what we expect and is able to provide the necessary information related to the purpose of the study (Bassett, 2004).

The key informants in this study were people who were deemed feasible and were directly involved in the ISO 9002: 2008 implementation working group, namely 19 people.

2.4 Data Collection and Analysis

Data collection in this study was obtained by conducting interviews, direct observation, participant observation and document review data. The interview technique used is semi-structured interviews which are included in the category of in-depth interviews.

Data analysis in this study was carried out during data collection until the conclusion was made. Data analysis was conducted qualitatively using qualitative content analysis. In the early stages of reducing data means summarizing, choosing the main things, focusing on the important things, for searching themes and data patterns. Next presents data in the form of a brief description, chart, relationships between categories and drawing conclusions. To authenticate the results of the study, data triangulation was carried out in the form of checking data from various sources in various ways, and at various times.

3. RESULTS

This study involved 19 informants who were directly involved in the process of implementing ISO 9001: 2008. Of the 19 respondents consisted of male sex as many as 11 people (57.9%) and the remaining women as many as 8 people (42.1%). Respondents generally have a age of 35-44 years as many as 10 people (52.6%), age> 44 years as many as 7 people (36.8%), and the rest aged 25-34 years as many as 2 people (10.5%). Based on the level of education, generally there are undergraduate (S1) there are as many as 11 people (57.9%), master (S2) there are 5 people (26.3%), diploma three (D3) there are 2 people (10.5%) and one people (5.3%) had doctoral level education (see table 1).

Table 1. General Characteristics of Respondents at Haji Hospital South Sulawesi Province South Sulawesi Province

<table>
<thead>
<tr>
<th>Respondents Characteristics</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-34</td>
<td>2</td>
<td>10.5</td>
</tr>
<tr>
<td>35-44</td>
<td>10</td>
<td>52.6</td>
</tr>
<tr>
<td>&gt;44</td>
<td>7</td>
<td>36.8</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>11</td>
<td>57.9</td>
</tr>
<tr>
<td>Female</td>
<td>8</td>
<td>42.1</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma three (D3)</td>
<td>2</td>
<td>10.5</td>
</tr>
<tr>
<td>Stratum 1 (S1)</td>
<td>11</td>
<td>57.9</td>
</tr>
<tr>
<td>Magister (S2)</td>
<td>5</td>
<td>26.3</td>
</tr>
<tr>
<td>Doctoral (S3)</td>
<td>1</td>
<td>5.3</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>100</td>
</tr>
</tbody>
</table>

Implementation of ISO 9001: 2008 Management System ISO 9001 is designed to meet the quality management system standardization. Companies that want to obtain consumer and third party recognition that the company has implemented good quality management practices, one of the ways that must be taken is to obtain an ISO 9000 certificate (Purnama, 2005).

From the results of interviews with key informants about the benefits of implementing ISO 9001: 2008 at the Makassar Hajj Hospital, information was obtained as follows: "... It means a lot of benefits, which means a lot of development, if we look at the previous years, before we ISO Hospital, especially in the polyclinic, the number of outpatients ... means that now after ISO it
can rise to 30%. Satisfaction of our patients every month we meet customers ... there are complaints from patients, well ... thank God so far the complaints are meaningful than before ISO there was a reduction ... "(ALM, 46 years old)

Based on the answers from respondents it was revealed that the implementation of ISO 9001: 2008 at the Makassar Haji Hospital had provided several benefits such as improving performance in terms of the number of outpatient visits and increasing patient satisfaction. The level of customer satisfaction with service is an important factor in developing a service delivery system that is responsive to customer needs, minimizes costs and time and maximizes the impact of service on the target population. The impact of the implementation of the quality management system ISO 9001: 2008 can also be seen from the performance indicators of inpatient units such as occupancy / utilization of beds which are often called BOR (bed occupancy rate), frequency of use of bed-BTO (bed turn over), length of day length-of-stay care, TOI (turn over interval), NDR (net death rate), GDR (gross death rate). Occupancy or utilization of beds (BOR) in Makassar Hajj Hospital in the last five years were 63.69% (2008), 75.12% (2009), 69.79% (2010), 71.22% (2011) and 72, 12% in the first quarter of 2012. This shows a positive trend even though it had experienced a decline in 2010.

Change Management Process

The stage of learning the basics of change which includes the reasons for the change is described by the informant as a problematic condition or a condition that makes the need for a comprehensive improvement through system changes namely the implementation of the ISO 9001: 2008 quality management system. In addition, from the results of interviews with key informants, information was obtained that the source of the changes that occurred in the Haji General Hospital was due to a new director change, meaning that the changes that occurred were still the initiation of the leadership.

One of the factors driving the success of change is how to communicate the changes to be achieved. The form of management of communication carried out at Makassar Haji Hospital in implementing the ISO 9001: 2008 quality management system is direct communication (two way communications) through regular weekly meetings and indirect communication in the form of non-conformity reports. Based on the results of interviews with the key informants mentioned above, it was also revealed that there was internal communication with all employees who were directly involved in the ISO implementation process through weekly meetings every Monday called morning coffee to discuss urgent issues. In addition, the management of Makassar Haji Hospital actively builds external communication with their customers through customer response meeting services and quality management representative responses (WMM) such as excerpts of interview results with the following key informants:

"... Every month we have the name of consumers' responses to service, all of them, both in VIP on all fronts. That was entered again oh...what is less conveyed again by WMM. There are complaints here we go, so we have internal corrections. If we are here as a team, all working groups are working as these working groups that are lacking ... in the WMM response there will be, or we are written, there is a letter, there is a lack of service sometimes through aiphone ... "(HDR, 55 years).

The important thing about efforts to consolidate change is the existence of awards and the support of leaders as the results of in-depth interviews with the following key informants:"... if in the past we didn't have any allowances for their names ... so we were lazy too right? Well, even though it's a little but there is a reward, he saw what the members lacked. We each have services and are given based on performance ... "(HDR, 55 years). From the
statement of the informant above, it can be explained that one of the efforts made by the management of the Makassar Hajj Hospital in consolidating changes was the provision of rewards in the form of allowances and fees even though the nominal quantity was not maximized.

**Supporting Factors and Barriers to the Process of Change**

One of the factors that support the process of change in the Hajj Hospital in South Sulawesi Province is because of the leadership's high commitment and the process of managing intense communication through routine meetings involving all staff. The process of consolidating changes in the form of providing rewards in the form of financial / incentives is felt to be lacking.

4. **DISCUSSION**

This research shows that the change process by implementing ISO 9001: 2008 starts with conducting internal and external environmental studies and is encouraged by the initiation of the leadership because of a condition that is very alarming. After going through studies of the need to make changes, it was followed by the process of determining the objectives and forming a team that would be directly involved or encourage the process of change in implementing the ISO 9001: 2008 quality management system. The process of determining the goals / objectives to be achieved from changes in this case the implementation of the ISO 9001: 2008 quality management systems is extracted from below, from the units or parts of each. Determination of quality objectives as objectives of change is explored from the focus of problems that often occur in each unit / section.

According to Newton (2007), in determining the purpose of the change there are three fundamental questions that must be answered. First, is change important? This question is useful for knowing common sense to achieve specific goals that have been set. Generally people force the achievement rather than how to do with the availability of time and resources. Second, what impact will customers or other stakeholders have on the changes made? The purpose of this question is to provide assurance that the changes made will make the organization better overall, not just for certain leaders and people. If the change has been successfully implanted, it should make the operation cheaper, more effective, better service quality or a wider and wider group of customers. Finally, can the change be achieved? This question is useful to ensure that we are not merely ambitious in making changes. Change managers can do more for the organization by conveying ambitions but must be realistic and achievable. Every project that is invested must be managed and can be achieved (Newton, 2007).

According to Sulaksana (2004), all employees at all levels must understand the problems facing the company. Everyone is given the opportunity to find and develop solutions. Openness in negotiations and communication with employees is intended to make the problem well understood (Sulaksana, 2004). On the other hand, employee involvement and by training new skills, new ways of working can be formulated. The employees are included in solving problems such as quality problems, attendance and so on. Many employees are given the opportunity to try new ideas to experiment and find solutions. According to Baltzer et al. (2011) in his study suggested that the key factor in changing health organizations is active employee involvement and good structure as a balance of uncertainty of change. This begins the process of changing attitudes that are more open to the idea of change. According to Bouckennooge (2010), readiness for change can be done by identifying the existence of gaps between the present situation and the conditions that should be. In real terms the need for change occurs from cognitive processes by comparing the old situation and the new situation similar to the concept of unfreezing from Lewin's (1951) in Bouckennooge (2010), namely the process...
by which members of the organization have changed beliefs and attitudes and perceptions that change is needs that will bring success.

Many companies treat changes such as a coincidence or a routine that will be completed automatically without a good plan. Whereas according to Robbins and Judge (2009), change should be a planned, intentional and goal-oriented activity. According to him, the purpose of change is twofold, namely: (1) to improve the ability of companies or organizations to adapt to changes that occur within their environment; (2) to change employee behavior. From the informant, information was also obtained that someone's involvement in the team / working group was based on the abilities and responsibilities that were owned and came from the unit or each part directly involved in the process of change. According to Newton (2007), change teams are people who are formed and work under the control of a change manager to make that change happen. The people chosen in this change team are people who can take time for change. For a larger change program, the change team can consist of tens or hundreds of people and can be divided into two groups, namely the core team and supporting teams. The core team contains people who are permanently destined to work on a change program and have the ability to do what is required in the period of time the project changes (Newton, 2007). The first step in forming a team that is able to direct change efforts is to find the right people (Kotter, 1997); (Kotter, et al., 2002).

From the perceptions of the informants it was also found that in making changes still had obstacles, there were still people who did not want change, people who did not have a sense of responsibility for change. Efforts made by the management of people who are resistant to persuasive approaches and ask the problems faced to make continuous improvements. During the implementation phase the monitoring and evaluation process changes smoothly. The mechanism of routine meetings is mostly carried out at the stage of implementation of changes to communicate the achievements of the objectives, as well as make efforts to improve the findings of the internal audit. Legitimate changes will get recognition only if the changes come from and involve grassroots levels (Klein, 2004).

One of the efforts made to consolidate change is the provision of rewards by benchmarking. In order to maintain the changes that have taken place from the conditions of stress and saturation, the management of the Makassar Hajj Hospital has prepared a religious program which they call the management of the acronym of "hajj hospital management embodies akhlakul karimah" This program aims to wrap the changes that have been running so that in order to increase work motivation and reduce stress levels in the work. In addition to providing non-financial rewards, the management of the Makassar Haji Hospital also provides financial rewards in the form of allowances and service fees even though the nominal value is not maximal. According to Lawler III & Worley (2006), in making changes organizations can use bonuses as rewards for individual performance to improve performance. The bonus approach can reduce one of many failure changes.

The general strategy for achieving the goal of change is communication. The communication process in managing change is a very vital aspect of the success of a change project because good communication will increase desire and encourage change movements (Aladwani, 2001). Overall the communication process in implementing the ISO 9001: 2008 quality management system at the Makassar Hajj Hospital runs well and is one of the keys to the successful implementation of these changes. According to Aladwani (2001) in his research on change management strategies for the successful implementation of the enterprise resource planning (ERP) explained that one effective communication
strategy is to convey the benefits of implementing an ERP system. Furthermore it is said that another communication strategy is to provide an overview of how to implement an ERP system will work. In some cases, the failure of ERP implementation is caused by lack of communication (Aladwani, 2001).

From the nine stages of change management in the implementation of the ISO 9001: 2008 quality management system at the Makassar Haji Hospital, the stage of managing communication became a key process of the management of changes made. Almost all stages of the 9 (nine) stages of change management use capabilities in managing communication. This is in accordance with Newton (2007), which places the stages of managing communication at each stage of change management. This research shows that communication management plays a central role in making changes. Although other stages cannot be considered more important.

5. CONCLUSIONS AND RECOMMENDATIONS

The application of the ISO 9001: 2008 quality management system at the Haji Regional Hospital in South Sulawesi Province is to improve and improve the quality of the service process by implementing behaviors that are in accordance with the minimum service standards and established standard operating procedures. However, the implementation of ISO 9001: 2008 has not been able to improve the performance of the Haji Hospital in South Sulawesi Province to the fullest. This is because the process of change by implementing ISO 9001: 2008 does not implement nine stages of overall change management. Changes made at the Haji Hospital in South Sulawesi Province in implementing the ISO 9001: 2008 quality management system were pure initiations from the leadership. Besides that the changes made in the Haji Hospital in South Sulawesi Province have not maximized the stages of learning the basic and consolidate change. It is suggested to the management of the Haji Hospital in South Sulawesi Province to improve the stages of change management especially at the learning stage of the basics and the stage of consolidating change through increasing the provision of financial rewards.

REFERENCES

- Green, J. & Thorogood, N., (2009). Qualitative Methods for Health Research,

Case Report

Cellular Therapy Improves Brain Metabolism in a Case of Chronic Ischemic Stroke

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ABSTRACT

Objective: Cellular therapy is an emerging therapeutic option for chronic stroke. The aim of this report was to study the effect of autologous bone marrow mononuclear cells followed by neurorehabilitation in the case of chronic ischemic stroke.

Method and results: The patient was a 50-year-old male suffering from ischemic stroke due to middle cerebral artery infarct since 4 years. The intervention included intrathecal administration of autologous bone marrow mononuclear cells followed by neurorehabilitation. He presented with right hemiparesis, dysarthria and memory deficits. He underwent cellular therapy twice at an interval of 6 months. Post cellular therapy the voluntary control, memory, ambulation and speech improved. The recovery was also marked by an improvement on Berg Balance scale (50 to 52), Beck Depression Inventory scale (23 to 9) and the Reach score. Comparative Positron Emission Tomography-Computer Tomography (PET CT) scan of brain 6 months after cellular therapy showed improvements in bilateral frontal cortex, parietal cortex, thalamus, cerebellum, medial temporal cortex, right basal ganglia, right temporal cortex, cingulate cortex which correlated with clinical improvements.

Conclusion: Cellular therapy along with neurorehabilitation was safe and beneficial. Cellular therapy assisted the impaired areas of brain in recovery as demonstrated on PET CT scan even at a chronic stage. To understand the efficacy of the cellular therapy further randomised controlled clinical trials should be conducted.

Key words: Stroke, Cellular therapy, Brain injury, Stem cells, bone marrow mononuclear cells, autologous, PET CT.

INTRODUCTION

Stroke is a condition that occurs when the supply of blood to the brain is interrupted due to blockage or rupture of a blood vessel, resulting into damage to the nervous tissue. The primary site of injury is called ‘umbra’ and the secondary having partially viable neuronal cortex is called ‘penumbra’. [1] Stroke is a leading cause of death and major source of disability in adults. [2]

Stroke is a disorder for which clinically effective therapeutic modalities are most needed and various ways have been explored to investigate their feasibilities. However, curative treatment for stroke is not available. [3] Recovery after stroke is determined by the site, extent of lesion and time. Present management of stroke aims at restoring blood flow and maintaining tissue perfusion through various techniques which include anticoagulants, antiplatelet aggregation agents or thrombolytic agents. [4] Most commonly used is recombinant tissue plasminogen activator (rt-PA) to breakdown blood clots. [5] However, these strategies lack desired effectiveness in preventing long term complications, have side effects and the recovery is incomplete. It is urgent to be able to provide a fundamental treatment to regenerate and prevent further damage of
neuronal cells. Hence, the use of stem cells for chronic stroke could be a breakthrough development.

Cellular therapy has been postulated as a beneficial therapeutic option for chronic stroke by promoting functional recovery through angiogenesis, neurogenesis and enhance neuroplasticity. Stem cells are immature cells characterized by their ability to proliferate and/or differentiate into specialized cells in the host tissue. Animal studies have revealed that Bone Marrow Mononuclear Cells (BMMNCs) transplantation for stroke leads to functional and neurological recovery. A study using mouse model has revealed that intrathecal administration of stem cells by lumbar puncture was useful and feasible for treatment of stroke. Similarly, studies in humans also support the safety and efficacy of intrathecal administration of stem cells for stroke. It is important to study the changes at the cellular level after cell transplantation. Here, in this case we have used PET CT scan as a monitoring tool.

The following case study discusses the safety and efficacy of cellular therapy in a 4 years old chronic ischemic stroke patient.

CASE PRESENTATION
A 50-year-old male was diagnosed with right hemiparesis due to acute ischemic stroke secondary to left middle cerebral artery (MCA) territory infarct 4 years ago. The ischemic episode started with weakness, speech problem and sensory loss in the right side of the body and loss of consciousness for 20 hours. He was hospitalized for 10 days followed by regular rehabilitation. His ambulation had improved as he could walk with the help of cane and right hip hiking, minimum knee hyperextension and foot drop. Memory also improved partially. But, despite regular rehabilitation, there were no further improvements. He still had complaints of slurred speech, difficulty in using right upper limb for functional activities, stiffness in the fingers, memory deficits, difficulty in walking and stair climbing. Due to these complaints, he decided to explore new treatment.

At assessment prior to cellular therapy, he was hypertonic with grade 1+ on Modified Ashworth Scale (MAS) in right upper limb and lower limb. Right upper and lower limb showed flexor synergy pattern. Voluntary control of the right shoulder, elbow, hip, knee and trunk was fair whereas it was poor in wrist, hand, ankle and foot. Sitting balance was good whereas standing and walking balance was affected. Speech, attention, memory and hand functions were affected. Right upper limb overhead activity was affected as his upper body dressing required assistance. He couldn’t chew food properly. He was ambulatory with the help of stick. Gait analysis showed right hip hiking gait pattern with minimum knee hyperextension. Functionally, he had modified independence for ADLs. Berg Balance scale (BBS) score was 50/56. Functional independence measure (FIM) score was 113. Beck depression inventory score was found to be 23. The score on the Modified Rankin scale (MRS) was found to be 3. Magnetic Resonance Imaging (MRI) of brain with diffusion tensor imaging (DTI) revealed severe gliotic changes involving the left frontotemporal lobes and gangliocapsular region. The flow void of the left intracranial (ICA) was obliterated, representing occlusion. PET CT scan of brain showed hypo metabolism in left frontal cortex, parietal cortex, cingulate cortex (anterior cingulate cortex, posterior cingulate cortex), temporal cortex, basal ganglia, thalamus, and right cerebellum.

MATERIALS AND METHOD
Considering his neurological and functional status 4 years after-stroke, he was enrolled for intervention using intrathecal administration of autologous bone-marrow-derived mononuclear cells followed by intensive rehabilitation. The patient was selected for intervention based on the inclusion criterion as per the World Medical Associations Helsinki declaration.
protocol for treatment was approved by the Institutional Committee for Stem Cell Research and Therapy (IC-SCRT). Detailed examination and assessments were conducted before cellular therapy, at the time of discharge (i.e., one week after stem cell administration) and at follow-up visits. A signed informed consent from the patient was obtained. Granulocyte colony stimulating factor (GCSF) was administered 72 hours and 24 hours before the harvest and transplantation of BMMNCs. Bone marrow (110mL) was aspirated from the iliac bone under local anaesthesia. Mononuclear cells (MNCs) were separated using a density gradient method in the neural tissue laboratory. A viable count of the isolated MNCs was taken and the percentage of CD34+ cells was checked by fluorescence-activated cell sorting (FACS) analysis. Percentage of CD34+ cells was identified using PE antibody which was 4.28%. A total of $2.4 \times 10^8$ cells were transplanted intrathecally with a viability of 98%. MNCs were then injected intrathecally into cerebrospinal fluid at the space between 4th and 5th lumbar vertebra via a lumbar puncture. Solu-Medrol 1 gm in 500 ml Isolyte P was given intravenously simultaneously during the injection to reduce immediate inflammation post transplantation. Cellular therapy was followed by neurorehabilitation including physiotherapy, occupational therapy, and psychological counselling. Physiotherapy was done to improve voluntary control, balance and to normalize the tone. To improve trunk mobility, voluntary control, gross motor coordination and normalize the tone occupational therapy was done. FIM, BBS, Beck Depression Inventory, reach test Forward/Backward/Right/Left (F/B/R/L), MRS were the outcome measures used. As there were improvements after 1st transplantation, he underwent the procedure for the second time 6 months after 1st cell therapy. The patient was followed up at three months and 1 year after 2nd intervention. The procedure was identical as the previous dose. $1.10 \times 10^8$ cells were injected for the 2nd time with 98% viability. Percentage of CD34+ cells was 2.34%. Before and after transplantation, a 15min static Positron Emission Tomography–Computed Tomography (PET - CT) scan of the brain using the radioisotope 18 - F FDG (fluorodeoxyglucose) was performed on a Siemens Biograph HD MDCT with LSO detector technology. Brain glucose metabolism was measured using high-resolution PET/CT camera. Images were reconstructed using standard vendor-supplied software. The PET/CT images were visually interpreted by an expert. The data was compared with the normal healthy data base on a voxel by voxel basis for quantitative analysis.

RESULTS
Functional and clinical assessment was done at the time of discharge (i.e., one week after 1st cell transplantation), no adverse effects were noted.

At three months follow-up after 1st intervention, his standing and dynamic balance improved. He could walk more confidently on uneven surfaces. Speech improved and his speed in rolling increased. The voluntary control of shoulder, hip, knee and ankle was improved to fair plus. Berg balance score showed an increase from 50 to 52. FIM score was maintained but qualitative changes were seen. He was unable to perform the reach test. The score at Modified Rankin scale was found to be 3. (Table: 1)

At six months follow up after the 1st intervention, the speech was better and the words were clearer. Oromotor skills had improved. He could chew food properly. Reach score (F/B/R/L) was found to be 4/3/2/2 inches. Berg balance score was 52. FIM and MRS was maintained. (Table:1) Comparison of PET CT scan 6 months following 1st cellular therapy showed significant improvement in bilateral frontal cortex (FC), parietal cortex (PC), right BG, right TC, cingulate cortex (ACC-anterior cingulate cortex, PCC- posterior cingulate cortex), mildly in bilateral
thalamus, medial temporal cortex and bilateral cerebellum (C). (Figure:1).

At three months, after 2nd cell transplantation his functional status was maintained. His upper limb overhead activity was improved. Memory had improved. BBS, MRS and FIM were maintained. Reach score (F/B/R/L) improved to 10/4/5/6 inches. Beck depression inventory score improved to 9. (Table:1)

At 1 year, after 2nd cell transplantation his functional status was maintained. His muscle tone had improved as stiffness in the fingers reduced. FIM and MRS were maintained. No new complaints or neurological worsening were reported in patient.

<table>
<thead>
<tr>
<th>Outcome measures</th>
<th>Score at assessment</th>
<th>Score at 3 months past 1st cellular transplantation</th>
<th>Score at 6 months past 1st cellular transplantation</th>
<th>Score at 3 months past 2nd cellular transplantation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional independence measure(FIM)</td>
<td>113</td>
<td>113</td>
<td>113</td>
<td>113</td>
</tr>
<tr>
<td>Bergs Balance Scale(BBS)</td>
<td>50</td>
<td>52</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>Beck Depression Inventory</td>
<td>23</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Reach test in inches (F/B/L/R)</td>
<td>Unable to perform</td>
<td>Unable to perform</td>
<td>4/3/2/2</td>
<td>10/4/5/6</td>
</tr>
<tr>
<td>Modified Rankin scale (MRS)</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

A] The PET CT scan before cellular therapy showed hypo metabolism in the left frontal cortex (FC), parietal cortex (PC), cingulate cortex (ACC- anterior cingulate cortex, PCC- posterior cingulate cortex), temporal cortex (TC), basal ganglia (BG), thalamus (T), and right cerebellum (C).

B] The Post PET scan following cellular therapy showed significant improvement in the bilateral frontal cortex (FC), parietal cortex (PC), right BG, right TC, cingulate cortex (ACC- anterior cingulate cortex, PCC- posterior cingulate cortex), mildly in bilateral thalamus, medial temporal cortex and bilateral cerebellum (C).

**DISCUSSION**

Stroke is a main cause of death and disability worldwide. The conventional management strategies in stroke include rehabilitation and medication such as thrombolytic agents have been
recommended, but still many patients live with enduring deficits. Thus, there is a need for alternative treatment strategies to address the underlying neurological deficits. Cellular therapy has been presented as a promising new modality for enhancing neurological recovery in chronic stroke. In this case prior to the cellular therapy, the patient had shown partial recovery with rehabilitation in memory and ambulation but was still dependent for his ADLs. Thus, by the combination of cellular therapy and rehabilitation, we aimed at activating brain rejuvenation and reperfusion through stimulation of regenerative mechanisms such as vasculogenesis, neurogenesis, angiogenesis, and synaptogenesis. The main objective of the restorative therapies is based on the concept of reorganizing brain, promoting implicit learning in the area with the lesion. Initially, it was thought that cellular therapy might work by 'cell replacement' mechanism, however recently a good amount of evidence has emerged suggesting that cellular therapy works by providing trophic or 'chaperone' support to the injured tissue and brain through its paracrine effects.

Preclinical study of bone marrow mononuclear cell transplantation has demonstrated that they migrate to the peri-infarct area, enhance recovery, and modulate the post-ischemic inflammatory response. Another study reported that intravenous administration of BMMNCs after stroke results in decreased infarct volume and good functional recovery in rats. Intra-arterial administration of BMMNCs leads to a decrease in ischemic damage and good functional recovery in rat model.

In our case study, Autologous BMMNCs was used because of several useful advantages including; easily obtained from bone marrow, the potential of autologous transplantation, no need for immunosuppressive regimes, lack of ethical or moral issues, no tumorigenicity and no genetic abnormalities. Rat studies have revealed that intravenously, very few cells reach the damaged site as most of the cells are trapped by the lungs, liver and spleen whereas intraarterial infusion was accompanied by high incidence of microocclusion and intracerebral administration is invasive and has high risk. The intrathecal route of administration is focused as it directly inserts the cells into the cerebrospinal fluid (CSF) and the cells are mobilized directly to the damaged part. Administration intrathecally is easy and devoid of any major side effects. The G-CSF helps in the stimulation of the CD34+ cells and survival as well as multiplication of the stem cells. In chronic stage, rehabilitation plays an important role in facilitating functional recovery through neuro-plasticity.

PET CT is a non-invasive, functional imaging tool which studies the correlation of changes in the metabolic activity of the brain with the activity of the nervous tissues. PET CT uses [18F]-fluoro-2-deoxy-Dglucose (18 FDG) dye, a glucose analogue which provides functional information of the cell based on glucose uptake. Preclinical and clinical PET studies with (18F-FDG) have consistently revealed a decreased 18F-FDG uptake in regions of presumed ischemic core.

Ischemic stroke disrupts the blood circulation leading to brain injury and hampers the metabolism of neurons. This eventually leads to the cell death and impairment in the brain function. The autologous bone marrow mononuclear cells exert therapeutic benefits by migrating to the injured site and protecting the nervous tissue from further injury and bring about neural repair through various paracrine mechanisms. BMMNCs secrete various neurotropic factors and anti-inflammatory cytokines including interleukin-10, insulin-like growth factor-1, vascular endothelial growth factor, and stromal cell-derived factor-1. It causes neurogenesis, angiogenesis, reduction in the cell death and apoptotic process and enhances neuroplasticity which together lead to the
neurorestoration and improvements in the clinical outcomes. [38, 39]

Clinical trials of autologous BMMNCs are found to be safe having no adverse effects. [6-19] No new complaints or neurological worsening were reported in our patient. It is widely believed that most stroke recovery occurs within 6 months, with little benefit of physiotherapy or other modalities beyond a year. This case report accentuates the effects of cellular therapy in chronic stroke. The voluntary control, memory, ambulation and the speech of the patient was found to be improved. The recovery was also marked by the change in the score of BBS and Beck depression inventory scale and the reach score. PET-CT brain imaging was used as the monitoring tool to study the effects of the intervention at the cellular level. Improvement in the metabolism was noted in PET CT scan report. These changes also correlated with the clinical improvements as shown in Table 2.

Table 2: Areas of brain showing improved metabolism and their clinical correlation

<table>
<thead>
<tr>
<th>Areas of the brain showing increased metabolism</th>
<th>Functions improved</th>
</tr>
</thead>
<tbody>
<tr>
<td>sensory motor cortex</td>
<td>voluntary movements and walking</td>
</tr>
<tr>
<td>posterior cingulate</td>
<td>memory</td>
</tr>
<tr>
<td>Cerebellum</td>
<td>posture, balance, coordination, and speech, resulting in smooth and balanced muscular activity</td>
</tr>
</tbody>
</table>

**Limitation:**
Though this is a single case study it highlights the fact that cellular therapy in addition to standard neurorehabilitation can achieve functional recovery even at the chronic stage of ischemic stroke.

**CONCLUSION**
The clinical improvements along with PET CT findings in this study suggest that autologous BMMNCs transplantation is safe, beneficial and has the potential of functional recovery in chronic ischemic stroke. It can be used in chronic stage of stroke along with standard treatment. PET CT can be used as a monitoring tool to record recovery after cellular therapy. However, to understand the efficacy of the cellular therapy in the chronic ischemic stroke further clinical trials in the form of multicentre randomized control studies are required.

**Conflicts of Interest:**
The authors declare that there is no conflict of interest regarding the publication of this article.

**REFERENCES**
8. Minnerup J, Seeger FH, Kuhnert K, Diederich K, Schilling M, Dimmeler S, Schäbitz WR. Intracarotid administration of human bone marrow mononuclear cells in rat photothrombotic ischemia. Experimental
Cellular Therapy Improves Brain Metabolism in a Case of Chronic Ischemic Stroke

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Profile Stigma of Leprosy Patients in Manokwari District Provinsi Papua Barat

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ABSTRACT

Background: A person who has leprosy experiences stigma from himself, family and society. Stigma for people affected by leprosy about diseases, ease of possible disease, the severity of disease, the benefits of positive behavior and the risk of negative behavior and treatment of leprosy.

Objective: To find out the stigma profile of lepers in Manokwari Regency, West Papua Province.

Research Methods: Qualitatively conducted at the Pasir Putih Community Health Center and Amban Community Health Center in November 2018 as many as 6 informants. Data obtained using in-depth interviews and analyzed qualitatively.

Results: Stigma of perceptions of informants about leprosy experienced psychopathic disorders such as crying, fear and shame. The informant's perception of leprosy risks transmitting to his family because he lives at home. The severity of leprosy is from the informant's response because it causes disability, paralysis, difficulty eating and drinking and considers leprosy as a savage disease because it can attack suddenly. The benefits of positive behavior from because they do not want to be deformed or disabled that continue or transmit this disease to other families. The risk perception of negative behavior of lepers states that it can cause disability and shame for life. Stigma towards faster treatment will be better for preventing disability. In addition, the informant acknowledged that it was too late for treatment because he did not know about leprosy. One of the reasons for the treatment expressed by the informants was because they wanted to recover quickly and did not want to get stigmatized from the family or from other people. One of the reasons informants from family stigma is fear of being avoided by the family so they feel isolated from their own family.

Keywords: Stigma, Leprosy patient, Transmission risks and Sudden attack.

INTRODUCTION

Leprosy is a disease that is feared by the public and family. At that time there was spontaneous isolation because the sufferer felt inferior and ashamed (stigma). Besides that people stay away because they feel disgusted and afraid this is due to a lack of knowledge or understanding as well as mistaken beliefs about disease leprosy. Many people still think that leprosy is caused by curses, uses, sins, food or offspring. In this modern era the term "stigmatization" appeared which reflected more "class" than physical. It is this process which ultimately makes the sufferers isolated from society, considered disgusting and must be shunned. Actually this stigma arises because of a perception of a disease that is wrong (Putri, 2016).

Surveys conducted by health ministries in five regencies in Indonesia (Subang, Malang, Gresik, Gowa, and Bone Districts) portray the discrimination experienced by leprosy sufferers both in the family environment, as well as in public facilities and services, such as being separated from spouses (divorced), issued or not accepted at work, rejected in schools,
restaurants, places of worship, health services and other public facilities (Ministry of Health, 2015). Stigma and discrimination often inhibit the discovery of cases of leprosy early, treatment of patients, and handling medical problems experienced by sufferers and people who have had leprosy. Therefore, in an effort to eliminate stigma and discrimination, strong motivation and commitment are needed from both sufferers and the community. Patients are expected to change their mindset, so they can be empowered to help themselves, even others. In addition, the community is also expected to be able to change their views and help sufferers and people affected by leprosy (OYPMK) to stay healthy and be able to maintain health independently (RI Ministry of Health, 2015).

Data on leprosy sufferers in Manowakri District, new leprosy cases reported in 2017 with a total of 265 or a prevalence rate of 15.56 percent. The new Multi Basiler case (MB) 64 percent, new cases in children 36 percent and level 2 defects as much as 3 percent. The incidence of leprosy defects in Manowakri District was 2%. Data on leprosy patients at Pasir Putih Community Health Center were 16 people and Amban Community Health Center were 21 people (District Health Office of Manokwari District, 2018). Based on the preliminary study conducted by the researchers found some behaviors of leprosy patients who were treated at the Pasir Putih Health Center and Amban Health Center were different from those of other diseases. Lepers who are waiting their turn for treatment are often seen behind, using long-sleeved shirts or jackets and hats to cover their hands and feet that have white or red spots that people might see. Lepers are more silent and rarely communicate with people around them. Interviews of 3 people with leprosy who suffered from level 2 disability said he often shunned his family, friends, and even other people when he saw the condition of his hand, so he felt embarrassed and even hurt by the treatment received from other people and even his family.

Based on this, the researcher was interested in conducting a study entitled "Stigma Profile of Leprosy Patients in Manookwari Regency, West Papua Province"

**MATERIALS AND METHODS**

2.1 Type of Research

This type of research is qualitative descriptive research. Syaodih (2008) states that descriptive research is the most basic form of research. Aimed at natural or human engineering conditions. According to Syaodih (2008) in Pongtiku, (2016) that qualitative research is a study aimed at describing and analyzing phenomena, events, social activities, attitudes, beliefs, perceptions, thoughts of individuals as well as groups. This type of research is qualitative with a case study approach, which is a method of research conducted with the aim of describing the problem that occurs to conclude the image objectively (Swarjana, 2013).

Focus on research to understand the stigma of lepers in Manokwari District, West Papua Province who describe the respondent's characteristics, stigma about leprosy according to respondents' perceptions, ease of possible illness, disease severity, benefits of positive and negative behavior and treatment of leprosy.

2.2. Place and Time of Research

*a. Research Place*

This research was conducted at the Pasir Putih Community Health Center and Amban Community Health Center, Manokwari Regency, West Papua Province.

*b. Research Time*

This research was conducted in November 2018.

*c. Informant*

The selection of informants is done by using a snowball sampling technique, namely the selection of sampling based on the involvement of informants who know the problem clearly, can be trusted to be a good source of data and able to express opinions well and correctly (Swarjana, 2013). Informants were sources of information who
suffered from leprosy and felt a stigma from themselves and the community, namely the leprosy recipient at the Pasir Putih Community Health Center as many as 3 people and Amban Puskemsas as many as 3 people.

RESULTS
The informants in this study were 6 people aged between 27 - 42 years, of which 3 were male and 3 were female. All informants came from the Papuan tribe, where 3 people worked as farmers and 3 people did not work or as housewives. Long suffered from leprosy between 6 months to 2 years. The general description of the respondents shows that the respondents were early adulthood (26-35 years) and middle-aged adults (36-45 years. In this age group the productive period in the lives of respondents. Respondents felt that their daily activities were very disturbed by their appearance due to changes in physical and decreased self-confidence. Education of the majority of respondents had basic education, ie no school 1 person, elementary school 2 people and junior high school 2 people, while 1 person had a high school education. Respondents who did not work partially were women, some housewives who took care of all their household activities.

Leprosy has a broad influence on the lives of sufferers, ranging from family, work, personal relationships, and interaction with the social environment. Most of the respondents had suffered from leprosy between 6 months to 2 years, in a long period of time the respondent had to always take medication and take medication regularly, if until late in treatment the respondent stated that the disease would reappear.

3.1. Stigma about Leprosy According to Respondent's Perception
Stigma is one of the factors delaying the handling of leprosy which makes people feel embarrassed and late in seeking treatment so that they have experienced disability which results in a decrease in quality of life. Based on the results of interviews with respondents as a quote from the following interview results:
"When I first got this disease, I felt that there was only a skin disease like phlegm and I just let it go, then there were families asking to check into the puskesmas at that time and I went there they said they had leprosy, it was a fear and shame once, where you have a wound, you don't have to be afraid - don't get cut into pieces, (Informant 1)

When I first checked into the puskesmas because of itching and skin pain, I felt rich in wounds, I said I had leprosy, I felt crying, why did I get sick, what would the family say, so after I returned I didn't tell anyone - the person in the house is still as usual, I'm afraid the family will be afraid of me (Informant 2) When I told you about leprosy, I was afraid because I was late for treatment, my hand was crooked like this, I think the leprosy had a cure but the clerk told me that I could recover, but for disability because of being late this disability could cured (Informant 3)

Sa regret that it's too late to go to the puskesmas to check, I feel leprosy if I get medical treatment, it's not like this, I think this disease is a kind of curse for me, kind of someone who uses it - so I got sick like this (Informant 4) I think this disease is very embarrassing, fortunately you are fast treatment, so you get disabled. if my disability is shy all my life, how can I not be ashamed if people see us with hand or leg defects (Informant 5). I know that I got this disease from where I arrived - suddenly my hand had an agatal race and wounded and was quick to go to the puskesmas at that time, so it wasn't too late. this kind of illness is very embarrassing if there is a family or other people near us, but thankfully you are fast taking medication and taking a routine treatment (Informant 6)

Based on the results of the interview it was concluded that the stigma of the perception of informants about leprosy generally all said shame. Rasamalu is caused due to ignorance of respondents.
about leprosy. After being diagnosed with psychopathic leprosy to informants, the dinat cry and fear. Informants who cry and fear because they think this disease is very frightening can even cause or be excluded from family and the environment.

Shyness and fear of the informant occurred expressed by the informant because he was late in conducting a search for help or treatment where two people had experienced disability. Leprosy prevention in Indonesia aims to reduce the burden of leprosy by reducing the transmission of disease, preventing disability in all new sufferers found through proper treatment and treatment, and eliminating social stigma in the community (Ministry of Health, 2011). This is in line with the WHO Strategy in dealing with leprosy, namely by creating quality services for leprosy patients and reducing the burden of leprosy that is carried out not only by early detection of cases but also by reducing disability, stigma and discrimination, and social and economic rehabilitation for leprosy patients (WHO, 2017). Surveys conducted by health ministries in five regencies in Indonesia (Subang, Malang, Gresik, Gowa and Bone) from 959 people portrayed the discrimination experienced by lepers in the family environment, as well as in public facilities and services, such as being separated from spouses (divorced), excluded or not received at work, rejected in schools, restaurants, places of worship, health services and other public facilities (Ministry of Health, 2015).

The perception of stigma felt by the information after being diagnosed with leprosy includes shame, fear of family exclusion, fear, curse disease and use - use. Stigma is a very discrediting attribute. Someone who gets stigma is someone who is not accepted and does not get respect, rights and acceptance from the community or someone who is not socially accepted (Goffman (1963) in Wong (2004). (Brakel, 2003) states that stigma consists of two parts, namely enacted stigma and felt / perceived stigma Enacted stigma is stigma obtained from outside the patient, while felt/ perceived stigma is stigma that comes from within the sufferer.

The stigma against leprosy in the community makes the sufferer delay / avoids treatment until later there is disability and unproductive so that it further affects the quality of life of the patient. Stigma is still the main factor that causes patients to delay seeking treatment.

The results of the interview were self-stigmatizing after being diagnosed with leprosy. Reasons for respondents delaying treatment because they do not know the initial signs of symptoms of leprosy. The stigma felt was also personal, as well as the stigma he would receive from his family and surrounding environment, especially to informants who had experienced disability because they would bear the shame of their lives because of their disability. According to Heijender (2004) in Rahayuningsih (2012) Stigma can be interpreted as an identity lost because of someone stigma can cause a loss of true identity. A person who is labelled leprosy will usually get negative consequences from his social environment, both for himself and for his family. Stigma can make a person not respected in his social environment or make the individual lower in status in society. The stigma against leprosy will dominate the perceptions that exist in the community about leprosy and how they must treat someone who is labelled leprosy in the community.

Based on the statement of the informant above, leprosy is a disease that creates a sense of stigma from oneself and the stigma felt by the social environment. This research is in line with previous research conducted by Putri (2016) in lepers who are in the Work Area of Balerejo Health Center, Madiun Regency, that leprosy sufferers feel a negative stigma against leprosy not only against affected individuals but also their family members. Negative impressions received by leprosy clients last a lifetime live even after the client is cured. Leprosy clients are treated
like exiles in the community because leprosy is considered a frightening disease or in other words disgusting and embarrassing. The patient's stigma and community stigma make leprosy clients not in a position to carry out the obligations and obligations they expect in their social and family environments. Stigma in leprosy clients like this certainly affects the understanding of disease and self-acceptance of leprosy clients (Princess, 2016).

The informant's income stated that leprosy is a disease that is closely related to negative views and discrimination, both those that arise from within themselves and from society. Stigma is an inherent predicate, undesirable (social and physical) distinction that degrades and discredits a person to be fully accepted in society.

3.2. Ease of problems with disease

Although the method of entering M. leprae into the body is uncertain, some studies of germs can enter through the skin which allows cold-temperature body parts and through the nasal mucosa. Transmission that occurs M. Leprae which is intact (live) out of the patient's body and enters the body of another person. Ways of Transmission of Leprosy In general, this transmission can occur by prolonged contact with patients. Patients who have taken medication according to the WHO regimen do not become a source of transmission for others (Ministry of Health, 2012). Based on the results of interviews with informants about facilitating leprosy, the following interview can be given.

Because I often work in the garden, sometimes I wash my hands at times or if there is air there, it might be affected by leprosy, this disease can also spread to people, so it's separate if you use your own items, towels a place to eat, for fear of being contagious to a family (Informant 1). This disease can be infectious, especially if there are people affected by leprosy around us especially in the family members who are sick, there is no one in the family who is sick, but maybe infected if you greet yourself, we usually shake hands with our new people and immediately hand, or maybe also when you are working, because farmers are not likely to hold it - hold it dirty, wash it in water that is dirty too bad maybe be if you sweat it makes you leprosy fast (Informant 2).

Initially I felt itchy, but there is usually a sense of dishwashing, so you think it's just normal, it's not leprosy, you know it's a disease, even though nobody's family has leprosy, there is neighbor who has leprosy, but lives far ahead (Informant 3).

This disease is very easy to infect people, this is just the tragedy that is sick in the family why you can get it, so be careful in your home, don't let someone love to spread to other people or family (Informant 4) maybe it's time to go to the market because you have this disease. This disease if late for treatment makes the defect make you feel embarrassed again, how embarrassed, people see - we see your hands or face if you are disabled (Informant 5).

Maybe it was hit by the people around because it was deliberately possible that he might get a leather, especially if he was shaking hands, maybe that was what made him suffer, especially if we washed our hands (Informant 6) The results of interviews with informants concluded that the ease of getting leprosy, namely three informants stated that work in the garden was dirty, sweating and washing hands in dirty water. In addition, two informants said that the transmission was not known with certainty and suspected the cause was when interacting with people around him such as shaking hands so that skin contact was likely to be affected by leprosy and one informant said that leprosy was suffered because he often went to the market and interacted with other people who transmit leprosy.

Leprosy is more common in sufferers with low socio-economic conditions (Wong, 2004). Social and economic conditions are one of the factors that influence transmission of leprosy.
Based on the results of the research by Nabila (2012) in Kediri Hospital, leprosy patients distributed the types of work of traders and factory workers, while in other studies conducted by Muchtar (2009 in the Skin and Sex Polyclinic of Dr. Wahidin Hospital Sudirohusodo Makassar, the majority of sufferers are farmers and a small proportion are housewives. These differences can be influenced by geographical factors and progress in the development of the city.

Most of the respondents have the perception that leprosy can happen to everyone, some respondents consider that people who are filthy and their condition decreases which can contract leprosy. Leprosy can be transmitted from lepers to others. Most of the respondents did not know how to spread leprosy and some said that the disease was transmitted through the air and one respondent stated that he could contract leprosy if his blood group was the same as the patient, if not the same would not be infected (Soedarjatmi, 2009).

The statement of the informant about the youth being affected by the disease is not known exactly as stated by the Indonesian Ministry of Health (2012), that the place of entry of leprosy germs into the host's body until now has not been confirmed. It is estimated that the method of entry is through the upper respiratory tract and through skin contact that is not intact. Leprosy is a disease caused by germs / bacteria named (mycobacterium leprae), this leprosy attacks the peripheral nerves of the person to be numb (but if treatment is rapid this can be prevented), leprosy is an infectious disease whose transmission is not easy, because according to research not all humans in the world who can be infected with leprosy, the proof is that we don't know if we have social relationships with other people but don't know if the person is a sufferer leprosy (Kusharmanato, 2013).

3.3. The severity of leprosy

Leprosy is a kind of biological disease, which lately may be more difficult for us to find sufferers around us. However, the facts prove that this disease still exists so that it remains a problem for all of us. The stigma attached to the sufferer causes this disease to be dual: in addition to biology, it is also social. Leprosy is a disease caused by bacteria, called mycobacterium leprae. This disease attacks the skin and peripheral nerves. Signs, white spots appear on the surface of the skin in various forms, most of which are whitish (like tinea versicolor) areas (Tarigan, 2013). The difference is, these spots don't feel anything, even numb. So, if it is scratched or stabbed to bleed, it won't feel any pain. If this disease is not treated immediately, then germs attack the nerves causing damage. These germs only attack the peripheral nerves, not attacking the brain or spinal cord. The areas most often attacked by germs are the forearm nerves, lower limbs, and face. If it attacks the hand, causes loss of feeling in the palm of the hand, paralysis of the fingers, and is seen as a finger kiting (claw hand), which is the state of the fingers bent inward and cannot be straightened so that it is in a clawed position. If it attacks the legs, causes loss of feeling on the soles of the feet, even the feet become perfect (foot drop), i.e. the ankles cannot be lifted up so that they are easily injured. Likewise, if it attacks the face, there is paralysis of the eyelid muscles so that it is difficult to close the eyes properly (Tarigan, 2013).

Based on the results of interviews with informants about the severity of leprosy as quoted in the following interview below Leprosy is very serious if we quickly check it, the first time it just feels itchy and normal, but when I go to the puskesmas tell me, I just found out that this is a serious illnes not just defective, but it can make me swear what about us this life (Informant 1) Leprosy is very dangerous if it is too late to be handled other than that also if not regular treatment can also be disabled (Informant 2)

You just found out, you've also seen a neighbor who is sick like this, but you just know that leprosy is very dangerous, especially if we prevent it - we can get this disease in our family, so this disease is
dangerous so we This must be careful with this disease, which hand is handicapped again, so I feel sorry and too sad with this disease (Informant 3)

This disease can make us even paralyzed, we can walk to eat and drink, we can also have difficulty eating, when I feel my hands and feet are difficult to move, I feel angry at myself why don't I immediately go to a health center (Informant 4)

This disease is very savage when you know where it arrives - when it comes to this disease, even though there are no leprosy in the family, maybe because you keep it clean after interacting with people (Informant 5). This disease is very dangerous, late treatment can be fatal to new disabilities, so you can return to the beginning, which makes people feel embarrassed, everywhere - especially if you talk to people around (Informant 6)

The results of interviews with informants concluded that the severity of leprosy that 3 informants stated that the severity of this disease in addition to causing disability can cause paralysis which has an impact on eating difficulties and makes it difficult to eat and drink. One informant stated that leprosy was a savage disease and one person said he was fortunate because he suddenly attacked. From the statement of the informants two people have experienced disabilities and revealed the danger of this disease. Individual perceptions of the same disease can be perceived differently. The informant perceives as a dangerous disease that suddenly attacks. What is felt by a person can be felt unhealthy for others. In reality, in the community there is a diverse concept of health-sickness that is sometimes not in line even contrary to the concept of healthy-sickness directed by health service providers. This difference in perception can affect individual behavior when sick, which sometimes tends to make their own decisions.

In this study, it was found that the majority of respondents considered leprosy a dangerous disease and serious reasons for respondents are cystic disease resulting in changes in physical shape and disability where this disability can slow down the lifetime. Most respondents viewed leprosy as a cause of death. It was stated that the symptoms that appeared during this disease were very severe, and when the first time they were treated 2 informants had experienced a disability until the respondents felt very dangerous, while other informants were quick to treat and stated that the disease was very embarrassing. Informants who suffer from leprosy experience disability due to the delay of the person to take the medicine perfectly or the medication is not complete. The delay in the diagnosis of leprosy can result in irreversible nerve damage that ends in permanent disability; this is in accordance with the opinion of Putra (2016) which states that patients who are sick more than 6 months and have just undergone treatment can increase the risk of disability. Early diagnosis and appropriate treatment are very necessary to provide understanding of cases of leprosy to sufferers.

**CONCLUSION**

Based on the results of the study concluded as follows:

1. Characteristics of informants aged between 27 - 42 years, 3 men of male sex and 3 people of female sex. All informants came from the Papuan tribe, where 3 people worked as farmers and 3 people did not work or as housewives. Long suffered from leprosy between 6 months to 2 years.
2. Stigma of perceptions of informants about leprosy experiencing psychopathic disorders such as crying, fear and shame.
3. The informant's perception of leprosy risks transmitting to his family because he lives at home.
4. The severity of leprosy from the responses of informants because it causes disability, paralysis, difficulty eating and drinking and considers leprosy as a savage disease because it can attack suddenly.
REFERENCES

- M Idrus, A Mallongi, J Ibrahim, Surveillance System Model for Pulmonary Tuberculosis Suspected in Pangkep Region, Indonesia, Current Research in Tuberculosis 9, 1-7, 2017
Program Studi Ilmu Kesehatan Masyarakat Kekhususan Biostatistika.


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Rationality of Antibiotic Drug Used to Medical Patient Post-Operatively in Selebe Solu Hospital Sorong City Papua Barat Province 2018

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ABSTRACT

Background: The rationality of using antibiotics is done to prevent the occurrence of resistance, effectiveness and efficiency of the use of antibiotics.

Subject Research: The aim to know rationality of antibiotic use in surgical patients at Selebe Solu Hospital in Sorong City for the period January - June 2018.

Research Method: Descriptive quantitative located in Sele Be Solu Hospital in November 2018. The population is surgical patients in April - June 2018 by observing the recipe and medical record. Data analyzed univariate using the Gyssens method.

The results of the study: Antibiotic use ratios in Sele Be Solu Hospital assessment of the accuracy of the results of prescription observations and medical records for rational categories of exactly 100% is the accuracy of the indications for antibiotics, types of antibiotics, antibiotic doses and method of administration. Inappropriate rationality was found in the condition of the patient as many as 5 people (6%), duration of use as many as 6 people (7.2%) and availability as many as 7 people (8.4%). Management of rationality on antibiotic use from data that meets the Gyssens category (0) Appropriate or rational antibiotic use is 79.5%.

Keywords: Rationality, Antibiotic, Medical Patient, Post Operative

1. INTRODUCTION

Irrational use of antibiotics will have a negative impact, one of which is the increasing incidence of bacterial resistance to antibiotics. For this reason, rational use of antibiotics is expected to have a positive impact, including reducing morbidity, mortality, economic losses and reducing the incidence of bacterial resistance to antibiotics.

Antibiotic sales in the world are estimated to be two-thirds done without prescription. The results of the study from the Antimicrobial Resistance in Indonesia (AMRIN study) from 2000 to 2004 showed that antibiotic therapy was given without indication in Sorong Hospital Selebe Solu as much as 20-53% and prophylactic antibiotics without indications of 43-81%. The AMRIN study team also found that antibiotic prescribing occurred in surgical patients with a high prevalence of 91%. For this reason, the use of antibiotics in surgical patients requires special attention because of the absorption, distribution, metabolism and excretion of drugs including antibiotics in surgical patients different from non-surgical patients, and different organ maturation levels so that therapeutic responses or side effects can occur.

Increased prevalence of irrational use of antibiotics in various fields of Medical Sciences including Health Sciences Surgical patients are one of the causes of the emergence of resistance. Antibiotic resistance can occur because it can or is congenital. In congenital resistance, all bacterial species can be resistant to a drug before bacteria contact with the drug. Clinically resistance is a serious matter, where bacteria that have been sensitive to a drug become resistant. Cross resistance can
also occur between antibiotic drugs that have similar work.

Studies conducted in Indonesia during 1990 - 2010 regarding antibiotic resistance, resistance occurred in almost all important pathogenic bacteria. This is a negative impact of irrational use of antibiotics, the use of antibiotics with unclear indications, dosage or duration of use that is not appropriate, how to use improperly, unclear drug status, and excessive use of antibiotics. Other effects of irrational use of antibiotics can result in increased toxicity and side effects of these antibiotics, as well as increased hospital costs. So that it is necessary to use antibiotics based on diagnosis by professional medical personnel, monitoring and regulation of the use of antibiotics to increase antibiotic use rationally.

The problem of bacterial resistance has also become a growing problem throughout the world so that the WHO issued a statement regarding the importance of examining the factors associated with the problem and strategies for controlling the incidence of resistance. One way to control the incidence of bacterial resistance is to use antibiotics rationally. Based on the description above, irrational use of antibiotics in surgical patients also needs special attention. Therefore, the researcher was interested in conducting a study on the rationality of antibiotic use in the Ward of the Patient Surgical Hospital of Selebe Solu General Hospital, Sorong City.

2. MATERIALS AND METHODS

2.1. Type of Research
The type of research used is descriptive with a quantitative data approach, namely research conducted to determine the value of independent variables without making comparisons. Quantitative data is numerical or numerical data (Sugiyono, 2013).

2.2. Location and Time of Research
The research was conducted on the 19th - 23rd November 2018 in the Ward of the Surgery of the Selebe Solu General Hospital in Sorong City.

2.3. Population and Samples

a. Population
Population is the overall object of research or object under study (Notoatmodjo, 2012). The population in this study were all inpatients in the Surgical Ward in April - June 2018 as many as 83 documented medical prescription data.

b. Samples
The sample is partially taken from the entire object studied and considered to represent the entire population called the research sample (Notoatmodjo, 2012). The sampling technique in this study used purposive sampling, namely all medical records prescribing antibiotic drugs in hospitalized patients on the surgical ward with complete data over the age of 15 years.

3. RESULTS

3.1. Results of Data Analysis Based on the Use of Antibiotics in Inpatients after Post Surgery

a. Types of Antibiotics
The results of the observation showed that out of 83 medical records of post-surgical inpatients in Sele Be Solu Hospital during the period of April - June 2018 there were 13 types of antibiotics used in post-surgical patients whose data is presented in table 1.

The availability of antibiotics in hospitals has been guided by the regulation of the Minister of Health of the Republic of Indonesia No.2406 / Menkes / Per / XII / 2011, with the drug management cycle from planning to monitoring and evaluation based
on the Formulariu Selebe Solu General Hospital, Table 4.3 shows that the types of antibiotics used include antibiotics cephalosporin, aminoglycoside, penicillin, fluoroquinolone and several other antibiotics such as metronidazole, doxycycline, meropenem, trimethoprim and chloramphenicol.

**b. Intravenous Antibiotics**

<table>
<thead>
<tr>
<th>No</th>
<th>Preparation</th>
<th>Antibiotics</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intraavenous Preparation</td>
<td>Ceftriaxone</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gentamicin</td>
<td>9</td>
<td>10.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Meropenem</td>
<td>9</td>
<td>10.8</td>
</tr>
<tr>
<td>2</td>
<td>Oral Preparation</td>
<td>Amoxicillin</td>
<td>15</td>
<td>18.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chloramphenicol</td>
<td>2</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ciprofloxacin</td>
<td>12</td>
<td>14.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Doxycycline</td>
<td>11</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Levofoxacin</td>
<td>4</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trimethoprim</td>
<td>11</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>83</td>
<td>100</td>
</tr>
</tbody>
</table>

The policy of limiting the use of antibiotics includes retention and saving of antibiotics. The types of antibiotics are limited depending on the germ field pattern in the room or hospital in question, in Table 4.4 shows that from 83 medical record records of postoperative inpatients in Sele Be Solu General Hospital whose data is retrospectively retrieved, there are types of intravenous antibiotics available widely used in patients during the period April - June 2018 is Ceftriaxone (12%). Ceftriaxone is a third generation cephalosporin antibiotic with a wider antibacterial spectrum, which has a longer half-life than other cephalosporin groups. These antibiotics, including anti-gram negative bacteria, are strong except for pseudomonas. Because of the ability of ceftriaxone to be able to encourage superinfection with resistant or fungal bacteria and also be able to concentrate throughout the network, it is considered in the selection of antibiotics for treatment of infection management and now ceftriaxone is a first line antibiotic for the treatment of infections in Sorong General Hospital Sele Be Solu. The most widely used antibiotic as empirical therapy, prophylactic and definitive therapy is ceftriaxone. Based on the Drug Information literature, second and third generation cephalosporins are no better than the first generation. Because of consideration of costs and concerns about the potential for emergence of resistance due to the use of broad-spectrum anti-infectious (McEvoy, 2004).

The high use of ceftriaxone as definitive therapy is contrary to the rules of the Republic of Indonesia Minister of Health Regulation. Based on RI Minister of Health Regulation No. 2406 in 2011, which stated that the use of antibiotics for definitive therapy should prioritize the selection of antibiotics with a narrow spectrum. The same use of antibiotics too often should be avoided; this is confirmed by Setiabudy (2007) who states the latest antimicrobials such as third generation cephalosporin, fluoroquinolones, aminoglycosides, preferably not too often used for routine purposes in order to maintain the availability of effective antimicrobials when resistance problems arise. Intravenous antibiotics can be replaced orally, if after 24-48 hours by seeing the patient's clinical condition improve, there is no impairment of digestive function (vomiting, malabsorption, swallowing disorders and severe diarrhea), good awareness and no fever (temperature> 36 and <38 degrees Celsius ), from Table 4.4 above shows that out of 83 medical records of post-surgical inpatients at Sele Be Solu General Hospital whose data was taken retrospectively, it was seen that the type of oral antibiotics that are widely used in patients during April - June 2018 is Amoxicillin (18.1%). Many reasons for using Amoxicillin because the Penicillin group by giving antibiotics orally which has a working mechanism in time dependent, which is the level in serum depending on the interval of administration is a therapy recommended as broad spectrum therapy that includes gram positive included in antibiotics, because organisms such as S. aureus, S. haemolyticus and Staphylococcus epidermidis.
3.2. Results of Data Analysis Based on Culture Results in Post-Surgical Patients

Bacterial culture is a method used to determine the bacteria that cause infection in an illness. Based on medical records of post-surgical inpatients at Sele Be Solu General Hospital (RSU) whose data was taken retrospectively, it was seen that patients who had data on culture results were (49.4%). The data is presented in table 4.6 to find out the type of infection, microbiological data needed to get the use wisely with effective results.

<table>
<thead>
<tr>
<th>No</th>
<th>Results</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Culture</td>
<td>41</td>
<td>49.4</td>
</tr>
<tr>
<td>2</td>
<td>Not culture</td>
<td>42</td>
<td>50.6</td>
</tr>
</tbody>
</table>

From the results of the culture data have been concluded and distinguished by gram negative and gram positive categories. And these data are presented in Graphs 1 and 2 below.

Most patterns of gram (+) Cocci in Staphylococcus sp and lowest Staphylococcus aureus.

The highest pattern of gram (+) Bacilli in E. Coli and Klebsiella Pneumonia and lowest Comamonas testoteroni

3.3. Rationality of Using Antibiotics Patients Inpatient Post-Surgery appropriately

The rationality of antibiotic use in post-surgical inpatients at Sele Be Solu Hospital in the period April - June 2018 can be seen in table 4.6

a. Rationality of the Use of Antibiotics
The results of the assessment of the accuracy of the diagnosis using antibiotics as a whole are appropriate (100%). The accuracy of this diagnosis is due to administration of antibiotics through culture examination. Rational, effective and safe treatment must actually apply to all medical actions carried out by the medical profession and not only limited to the use of antibiotics. Rational means that the diagnosis of the disease must be determined appropriately so that the selection of drugs can be done appropriately and regarding the target with minimal side effects. The main thing that needs attention in giving antibiotics is effectiveness, toxicity and price (cost). Effectiveness is the most important thing in choosing antibiotics. Effective antibiotics must be active against pathogens that cause infection and must be able to reach the site of infection with sufficient concentration. All antibiotics have potential toxicity. Toxic effects can be idiosyncratic, such as allergic or bone marrow aplasia caused by chloramphenicol, or damage to organs or tissues such as kidneys due to aminoglycosides and ototoxic by amphotericin B. Antibiotics can also resulting in changes in microbial ecology in hospitals that cause resistance, a problem that often occurs in ICU intensive care.

The problem of cost (cost) is something that also needs attention in the selection of antibiotics. The choice of antibiotics is not only determined by the drug price (drug acquisition cost), but it is necessary to consider the cost of administration, time of administration, fluids and infusion equipment and monitoring costs (drug delivery costs).

### 4.2 Appropriate assessment of the patient’s condition

The results of the assessment of the accuracy of the assessment of the diagnosis of the patient using antibiotics in the right category were 78 people (94%) and incorrect as many as 5 people (6%). Efforts
to make appropriate drug selection can be done after the diagnosis is properly enforced. Thus, the selected drug must have a therapeutic effect in accordance with the spectrum of the disease (Ministry of Health, 2011a). Reference AAFP (2011) does not provide the choice of aminoglycoside class antibiotics as a therapy for cystitis. Amikacin is used as a therapy for serious infections in gram negative aerobic bacilli bacteria that have been identified as resistant to gentamicin and tobramycin so that it can be said that antibiotic selection is not appropriate (Hopkins, 2012). Although the selection is not right, Rossetti (1986) said that the use of amikacin can be a therapeutic and rational for patients with cystitis with a total effectiveness of 99.3% but it should be noted that side effects that can occur in patients.

If a urinary tract infection is suspected to be caused by more than one microorganism, the use of combination antibiotics can broaden the spectrum of antimicrobial activity so that the effect achieved is greater than the use of a single antibiotic. When patients are hospitalized for quite a long time, gram negative bacilli microorganisms can grow in blood culture so that patients can get nosocomial infections. Combination of beta-lactam agent with fluoroquinolone can be used to prevent nosocomial infections (Leekha, 2011). Combinations of different cephalosporin groups with different generations can be given due consideration of their effectiveness with infectious bacteria. 2nd generation cephalosporin is more effective in community-acquired infections while 3rd generation Cephalosporin is more effective in hospital-acquired infections. Giving a combination of cephalosporin generation 2 and 3 is expected to have a greater effect than a single administration (Agbor, 2011). However, the same combination of Cephalosporin groups with the same generation can increase resistance because bacteria can quickly adapt to new environments. The principle of combination antibiotics is the administration of more than one type of antibiotic to treat certain infections, the aim is to increase antibiotic effectiveness in specific infections (synergistic or additive effects), overcome mixed infections that cannot be overcome by only one type of antibiotic and overcome life-threatening cases of infection unknown bacterial cause. (Sun, 2012).

4.3 Exact Type of Medicine

The results of the assessment of the accuracy of the exact assessment of the type of drug in patients using antibiotics as a whole in the right category were 83 people (100%). Choosing an antibiotic agent for the treatment of infection is far more complicated than matching a drug to a known or suspected pathogen. One of the abuses of antibiotic use is giving when actually the antibiotic is not needed, such as for example in a viral infection that is actually not need antibiotics. The initial selection of antibiotic use is almost always empirical where antibiotic empirical selection is usually based on information collected from the patient's history and physical examination. Selection of agents is usually chosen by broad-spectrum antibiotics if bacterial culture is not carried out (Dipiro et al, 2015).

According to the Ministry of Health (2011a), what is intended is an indication of disease is the administration of antibiotic agents is only given to patients diagnosed with bacterial infection. The diagnosis of urinary tract infection can be ascertained by looking at the main diagnosis on the summary sheet of patients entering and leaving, the results of abdominal ultrasound examination and urine leukocyte sediment results on the urine examination laboratory results sheet. In this study the accuracy of the indications for antibiotic use showed 100% results, which means that all patients get the right therapeutic treatment as indicated by urinary tract infection. The use of antibiotics in accordance with the indications can prevent or reduce the risk of antibiotic resistance (Ministry of Health, 2011).
Choosing an antibiotic agent for the treatment of infection is far more complicated than matching a drug to a known or suspected pathogen. One of the abuses of antibiotic use is giving when actually antibiotics are not needed, such as for example in viral infections that actually do not need antibiotics. The initial selection of antibiotic use is almost always empirical where Empirical antibiotic selection is usually based on information collected from the patient's history and physical examination. Selection of agents is usually chosen by broad-spectrum antibiotics if bacterial culture is not carried out (Dipiro et al, 2015).

4.4. Right Dosage

The results of the exact dose assessment in patients using antibiotics as a whole in the right category were 83 people (100%). Dosage is very influential on the effects of drug therapy. Giving a dose excessive risk is very risky for side effects. Conversely a dose that is too small will not guarantee the achievement of the level of therapy expected by an antibiotic (Ministry of Health, 2011a). Accuracy of dosage is adjusted by adult dose reference in the literature on Diagnosis and Treatment of Acute Uncomplicated Cystitis (AAFP, 2011), Diagnosis and Management of Acute Pyelonephritis in Adults (AAFP, 2005) and IONI (BPOM, 2014) with dose ranges referring to the Drug literature. Information Handbook 24th (APA, 2015)

According to Paterson et al. (2016), using excessive doses of antibiotics has been identified as the main cause of resistance. While the use of antibiotics with less doses can result in therapeutic effects that are expected to be unattainable because antibiotics do not reach the Minimum Inhibition Level (MIC) (Lisni et al, 2015). Antibiotic treatment appropriately depends on value parameters and types of bacteria that infect and select and optimize the dose of pharmacodynamic use of antibiotics. During treatment, monitoring needs to be done to see whether the antibiotics given have reached therapeutic levels or not (Connors et al., 2013).

4.5. Proper Way of Giving

The results of the exact assessment of how to administer antibiotics in the right category were 77 people (92.8%) and incorrect as many as 6 people (7.2%). The duration of administration of antibiotics in the management of infections must always be considered. Giving the drug in a parenteral and oral manner by looking at the patient's clinical condition. The study was carried out in line with what Fazriayh (2017) conducted who evaluated the use of prophylactic antibiotics in surgical appendectomy patients with the ATC / DDD method and 90% DU which revealed that based on various guidelines, prophylactic antibiotic administration routes should be given intravenously. Administration of prophylactic antibiotics intravenously proved effective in avoiding the incidence of surgical wound infections (ASHP 2013, SIGN 2014). In this study all patients were given prophylactic antibiotics intravenously, so that the assessment of the accuracy of prophylactic antibiotic routes in 119 patients (100%) was considered appropriate.

4.6. Exactly Usage Length

The increasing prevalence of irrational use of antibiotics in various fields of medicine includes being wrong one cause of resistance. This is a negative impact of irrational use of antibiotics, the use of antibiotics with unclear indications, inappropriate dosage or duration of use, improper usage, unclear drug status, and excessive use of antibiotics. Other impacts from irrational use of antibiotics can result in increased toxicity and antibiotic side effects, and increased hospital costs (Kakkilaya, 2010). The results of the assessment of the exact duration of antibiotic administration in the right category were 77 people (92.8%) and incorrect as many as 6 people (7.2%). The duration of administration of antibiotics in the management of infections must always be considered. Provision of drugs with recommendations and time intervals by
looking at the clinical condition of patients who are too short or too long from those that should have an effect on the outcome of treatment (Ministry of Health, 2011).

In practice, the optimal duration of antibiotic therapy depends on clinical syndromes, causative microorganisms and the patient’s response to therapy (Gilbert 2015). Duration of drug administration in post-surgical patients given antibiotics with a duration of days between 3 days 8 days (Permenkes, 2011). Research conducted by Zakiya (2017) in Bhakti Dharma Husada Hospital Surabaya that antibiotic use that is too short falls into the category IIIB which indicates that antibiotic use is too short or less than 48 hours, 2 days or not according to the antibiotic rules. In the results of this study in the Sele Be Solu General Hospital, 2 cases of antibiotic use were used that were too fast and long on gentamycin antibiotics on the grounds that it was recommended to consume gentamycin within 7-10 days but only consumed 3- Just 5 days. Category IIA is a category that shows the use of antibiotics with inappropriate doses.

In this study, there were 2 cases with improper administration intervals including administration of chloramphenicol antibiotics only given 2x / day which should be the interval of administration of chloramphenicol antibiotics which is 4x / day. The use of appropriate antibiotics, namely the use of antibiotics with a narrow spectrum, in strict conditions with adequate doses, intervals and the duration of appropriate administration (PERMENKES, 2011).

4.7. Proper Availability

The results of the assessment of the exact availability of antibiotic use in the right category were 76 people (91.6%) and incorrect as many as 7 people (8.4%). The basis for choosing the type of antibiotic is according to sensitivity and pattern of the most pathogenic bacteria in the case concerned, narrow spectrum to reduce the risk of bacterial resistance, low toxicity, do not cause adverse reactions to the administration of anesthetic drugs, are bactericidal, affordable prices (Permenkes, 2011). The most microorganisms isolated from infections that occur after an appendectomy are Gram negative aerobic and anaerobic bacteria. Bacteroides fragilis is the most commonly found anaerobic bacterial culture, and E. coli is the most aerobic bacteria (Bratzler et al., 2013). In addition, other bacteria associated with appendicitis are K. pneumonia, Streptococcus, Enterococcus and P. aeruginosa (Chen et al, 2012).

4.8. Proper Management

Based on the research data, there are only a few categories of Gyssens (IVA, IVC, IIIA, IIA, IIB, 0) from 13 Gyssens categories that enter the assessment of the quality of antibiotic use in postoperative patients at Sele Be Solu Hospital in April - June 2018, the results of the Gyssens assessment showed that the use of antibiotics that met the Gyssens 0 category (appropriate use of antibiotics) was 79.5%. Of the 83 medical records of post-surgical inpatients who used antibiotic therapy all cases had laboratory tests and diagnostic data, only 42 of 83 patients had bacterial culture examination data to see antibiotic sensitivity to certain bacteria. If based on completeness of data, most medical records will be categorized as VI (incomplete data).

4. CONCLUSION

Based on the results of evaluating the quality of antibiotic use in postoperative inpatients at the Sele Be Solu General Hospital (RSU) in April - June 2018 the results can be concluded with the following accuracy:

1. Indications according to the diagnosis of using antibiotics as a whole are appropriate (100%).
2. The condition of patients using antibiotics in the right category was 78 people (94%) and incorrect as many as 5 people (6%).
3. Type of drug in patients using antibiotics as a whole in the right category as many as 83 people (100%).
4. The dose in patients using antibiotics as a whole in the right category is 83 people (100%).
5. How to give antibiotics as a whole in the right category as many as 83 people (100%).
6. The duration of use in the right category is 77 people (92.8%) and incorrect as many as 6 people (7.2%).
7. Availability of antibiotic use in the right category is 76 people (91.6%) and inaccurate as many as 7 people (8.4%).
8. Management of rationality on the use of antibiotics from data that meets the Gyssens category (0) the use of appropriate or rational antibiotics is as much as 79.5%.

REFERENCES
• Abdullah, R. 2012. Antibiotik Abuse in Developing Countries. Pharmaceutical Regulatory Affairs, 1-2
• Katzung, B.G. 2002. Farmakologi Dasar dan Klinik, Edisi 3 Jakarta: EGC
• Larasati, Putri. 2015. Pengaruh Konseling Dengan Bantuan Media Leaflet Terhadap
Pengetahuan Penggunaan Antibiotik pada Masyarakat Patrang Kabupaten Jember


Determinant Factors in Remote Regional Health Services in the Wondiboy Health Center in Teluk Wondama District (Case Study in Sendrawoi District Health Center)

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ABSTRACT

Background: Health Centre or Puskesmas as the primary service provider that is the mainstay of service for the community, has not been able to provide services to remote areas, border areas and islands. The working area of the Puskesmas is quite extensive, geographically it is difficult to reach, a small population, scattered in small groups far apart. The transportation is very limited with expensive fees both land, sea and air. Public health status and health service coverage in remote border areas are still low.

Methods: The purpose of this study is to identify the factors that influence the affordability of Wondiboy health center services (Case Study in Sendrawoi Pustu) which are included in remote areas of Wondama Bay Regency. This study uses a descriptive method with a qualitative research approach. Starting from some of the opinions of the experts above, the type of this research is descriptive in the form of qualitative research methods, namely obtaining an overview of energy, facilities, health problems, community access in Puskesmas services, service factors, traditional factors, community behavior factors is a determinant that influences the affordability of health services in remote areas in Sendrawoi Pustu, Wondama Bay Regency.

Results: There is insufficient coverage according to existing needs because more personnel are employed in cities than in remote areas, the security of officers is not guaranteed live in pustu. Means for Health Services in Remote Areas in Wondiboy Health Center Teluk Wondama Regency (Case Study in Sendrawoi District Health Center), lack of health equipment and health support facilities (laboratories) in the puskesmas often disappoints people who eventually have to travel far and difficult. This situation is strengthening the interest of the community not to go to the puskesmas. Therefore, it is necessary to complete medical devices and consumables that support health services, especially for cases of diseases that occur in many auxiliary health centers. Funds in Health Services in Remote Areas Wondiboy Health Center, Teluk Wondama Regency (Case Study in Sendrawoi District Health Center) is available but not sufficient to carry out health services in all remote areas and tourism in Wondama Bay in general.

Keywords: Energy, facilities, health problems, community access

1. INTRODUCTION

The direction of health development goals is to increase the reach and equal distribution of quality health services for the community border and island remote areas especially in DTP national priority health centers. In order to increase reach and even distribution of services health, an action plan and development plan have been prepared. There are 6 (six) strategies determined by the Indonesian Ministry of Health., 2010 namely:1) Mobilizing and empowering the community in DTPK, 2) Increasing DTPK community access to health services quality, 3) Increase financing for health services in DTPK 4) Increasing the empowerment of Health Human Resources in DTPK, 5) Increasing the availability of drugs and supplies and strategies 6) Improve management of
Puskesmas in DTPK, including surveillance systems, monitoring and evaluation, as well as a Health Information System.

The Indonesian Ministry of Health develops an action plan and operational development plan for implementation in the field including community empowerment in the form of Desa Siaga, Poskesdes, Posyandu, improving Maternal and Child Health (MCH), Nutrition, Prevention of Infectious Diseases, Flying Doctors, Doctors Plus, Houses Moving Pain, increased health financing in the form of Special Allocation Funds (DAK), Co-Administration (TP), deconcentration funds, Social Assistance Programs, Community Health Insurance(Jamkesmas), Health Operational Assistance (BOK), Childbirth Assurance (Jampersal), HR improvement especially Health Human Resources in the form of Non-Permanent Employees (PTT), Special Assignments, Study Tasks, improvement of medication and health equipment, improved health management (including management training Puskesmas, surveillance program); the development of Basic Essential Neonatal Obstetric Services (PONED) at the Puskesmas and the Maternal and Infants’ Babies Hospital (RSSIB) and Comprehensive Obstetric Neonatal Services (PONEK) at the Hospital; improving the appearance and performance of Puskesmas in border areas between countries; and the development of Flying Health Care; and Support for inter-island transport with Water-Around Health Centers (RI Ministry of Health, 2010).

There are three target groups, namely infants, toddlers and pregnant / postpartum / breastfeeding mothers. The public problem or issue that arises is that the border area is a country window, in addition to remote areas, borders and islands (DTPK) has extreme topography. Therefore the role of infrastructure is one of the important physical components of the border region because of systematic infrastructure development.

In its implementation, health services in remote and very remote areas are based on health centers, namely as technical implementers of the District / City Health Office which are responsible for organizing health development in their working areas, because Puskesmas are always in the District area or in rural areas. Some related policies that regulate basic health services, including: Kepmenkes number. 128 of 2004, concerning the Basic Policy of Puskesmas, Kepmenkes number 949 and 1239 in 2007 and health service guidelines for remote and very remote health centers in disadvantaged areas, which in principle play a role in organizing health efforts to increase awareness, willingness and ability to live healthy for each resident to obtain optimal health degree.

Everyone has the right to an adequate standard of living for the health and well-being of himself and his family. As a human right, human rights are inherent in a person not because of a person or state, and therefore certainly cannot be revoked and violated by anyone. The condition of the people across the border, coastal areas and rural areas has conditions that have socio-economic conditions that are not different from those in Indonesia. But the fact that it is clear is that health services in general have not been evenly distributed in all remote border areas and islands with people living in urban areas. The priority situation is the emergence of health problems that are not yet clear standard health services provided by health providers along the border and inland areas. While the right of the Puskesmas which is the spearhead of access to health services is very instrumental in health services in remote areas.

Puskesmas as the primary service provider that is the mainstay of service for the community, has not been able to provide services to remote areas, border areas and islands. The working area of the Puskesmas is quite extensive, geographically it is difficult to reach, a small population, scattered in small groups far apart. The transportation is very limited with expensive fees both land, sea and air. Public health
status and health service coverage in remote border areas are still low. The community in general does not yet have the knowledge and behavior of healthy living and unfavorable environmental conditions. The use of Puskesmas in remote areas is influenced by, among others, access to services that are not only caused by distance problems, but there are two determinants, namely determinants of supply, which are service factors, and determinants of demand which are user factors (Timyan Judith, et al. 1997). Determinants of provision consist of service organizations and physical infrastructure, service locations, availability, utilization and distribution of officers, service costs and service quality. While the determinant of demand which is a user factor includes the low level of education and the socio-cultural conditions of the community and the level of income of the low or poor people. The primary need to obtain effective service access is the availability of facilities and officers, affordable and financial distance and social cultural issues that can be accepted by the user. The constraints are the distance of the residence of the user from the service area, the lack of tools and supplies of the service area, lack of funds for transportation costs, and lack of funds for transportation costs, lack of funds for medical expenses. In addition to transportation facilities and infrastructure factors, there are still many other factors that have not been revealed clearly related to the affordability of services that can help resolve the problem.

Health services carried out in West Papua Province and Districts in the West Papua region are with Puskesmas services inside buildings and outside buildings. Three-quarters of the number of Puskesmas in West Papua Province are located or have working areas in remote areas. Of course the characteristics of such areas are not enough to rely on the static services of the Puskesmas and / or the services of the Mobile Puskesmas (Pusling). Even though for several years the Acceleration of Health Development program in Tanah Papua (P2KTP) or Save Papua was carried out, in 2009 - 2010, when the results were not maximized. Then in the following years, this kind of service, packaged in Flying Doctor Health Care (FDHC) or Community Based Health Services with APBN and APBD funding sources. The research question is how is the health center of the Puskesmas and how is the service pattern of puskemas and its networks in remote border areas?

Based on the research questions above, the purpose of this study is to identify the factors that influence the affordability of Wondiboy health center services (Case Study in Sendrawoi Pustu) which are included in remote areas of Wondama Bay Regency. This research is focused on 2 (two) supply determinants which are service factors, and demand determinants which are user factors. The results of the research can be used as input for the program and policy makers so that the efforts of health center implementers in remote areas, borders can be reached and reach the public.

2. MATERIALS AND METHODS
2.1 Type of Research
This study uses a descriptive method with a qualitative research approach. Starting from some of the opinions of the experts above, the type of this research is descriptive in the form of qualitative research methods, namely obtaining an overview of energy, facilities, health problems, community access in puskemas services, service factors, traditional factors, community behavior factors is a determinant that influences the affordability of health services in remote areas in Sendrawoi Pustu, Wondama Bay Regency.

2.2. Location and Time of Research
This research was conducted at Wondiboi Health Center and in Sendrawoi Pustu, Wondama Bay Regency as one of the far-reaching Sub-District Health Centers from the city of Rasiei, the capital of Teluk Wondama Regency, which was held from October to November 2018.
2.3. Informant and How to Determine it

According to Moleong (2007; 90) Informants are people who are used to provide information about the situation and background conditions of the study. Whereas Rusidi (2006; 28), suggests that informants are people who are able to provide true data / information - the truth about other people or their environment, while respondents are people who are able to provide true data / information - truth about themselves (motivation, ideas, sentiments, attitudes, activities / real work - really).

Table1. Respondent Characteristics

<table>
<thead>
<tr>
<th>No</th>
<th>Informant</th>
<th>Age</th>
<th>Occupation Position</th>
<th>Education</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Informant 1</td>
<td>54 year</td>
<td>PNS Chief S1 Informant Key</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Informant 2</td>
<td>52 year</td>
<td>PNS Chief dept S1 Health staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Informant 3</td>
<td>39 year</td>
<td>PNS chief central Doctor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Informant 4</td>
<td>34 year</td>
<td>PNS Staffs D3 Seaman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Informant 5</td>
<td>50 year</td>
<td>PNS Head S1 District Wondiboi</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By looking at table 1 above, an illustration of age is obtained informants ranging from 34 years to 54 years. Of the 5 informants, all were male. They are ASN, including 2 people working at the Wondama Bay District Health Office. Each of them held the position of Head of the Health Office, Head of Health Services, 1 Head of Community Health Center, 1 Person of Pustu Sendrawoi Officer, 1 person Head of Wondiboi District.

2. Profound Interview Results

a. Power Variable:

Informant 1: "In general, the number of staff in Wondama Bay District has not been able to fulfill health services considering the number of Puskesmas is quite extensive and is an area that is difficult to reach, partly by sea, land which is quite steep. So in general our labor is still lacking. Health workers are there, but still lacking. Therefore we remain with all our might personnel so that health services must still be carried out. One effort is to provide PTT doctors and contract workers".

Informant 2: Personnel scattered in several Puskesmas have not been evenly distributed so that the number of available staff has not maximally carried out essential services including activities outside the building. The main obstacle is that the facilities of the Pustu located near the village often have no officers in the place. The officers mostly live in the city rather than having to be in the village. This is a matter of consideration to be an evaluation for us."

Informant 3: "Health workers do exist, but they are not sufficient because we have difficulty managing our employees. This is due to employees who have their SK placed in rural areas always wanting to move to the city, on the grounds that they follow their husbands. Some say they don't feel at home, there is no attention from the government. The sanction that we give to employees - employees, who are lazy, is to give a reprimand letter and even some employees are detained. On the other hand, with limited energy, resulting in multiple tasks, so that sometimes other tasks are ignored.

Informant 4: The limited energy in the Wondiboi Community Health Center made us fail in doing services, so some activities were reduced by the number of visits that should be once a month for 3 months. If the main puskesmas has a meeting or minilok activity, it means that the pustu is not open. So if there is an emergency patient, it must be rushed to the main Puskesmas. The officer also said that he was not comfortable because of the lack of security factor in this area, some officers who had served were not at home, one of which was inadequate housing, lighting was not good either".

Informant 5: "The pustu officer arrived at the pustu, the clerk was at least two weeks before he arrived, and even once a month came all the health centers around
the road for drugs. The officers are still lacking, so there are more in the city. This is what we still use as an apparatus to continue to expect attention from the government in providing nurses and paramedics in our area”

From the results of interviews with 5 informants, the results were obtained: When viewed from existing resources, the number of health workers needed, both those engaged in promotive, preventive, curative and rehabilitative fields there are still many in the city. All informants said the number of personnel in the Puskesmas was there but the distribution was not evenly distributed. The number of nurses and midwives for medical services inside and outside the building is still lacking. Similar to the condition of doctors, there are still many services in the building. The distribution of local health personnel must be optimized, especially to remote areas. Optimizing health workers is one of the efforts to increase the availability, equity and quality of health workers, especially in remote, disadvantaged, border and island areas (DTPK). The safety factor is also inadequate where the officers and lighting are still using makeshift tools. Feeling uncomfortable with the environment around the house.

b. Means variable:

Informant 1: "The main building of the Wondiboi Community Health Center is quite extensive, there is a doctor's house, a house for paramedics. There are also 6 Pustu buildings, but only 4 are active, the vehicles owned by the Wondiboi Health Center only have 1 unit, but not all people use ambulances to operate services in remote areas. Facilities to support health services are also still limited, for example the equipment owned by the health center is still minimal, equipment for blood tests? Mini laboratories are still constrained by energy and equipment. The lack of health services cannot be entirely blamed on field officers, because to get maximum service, it is necessary to support the performance of medical personnel, the condition of the infrastructure that is the complaint of the officers. The addition of cars and two-wheeled operational motors must be prepared. It's no longer a secret that service in remote areas is always complained about.
"

Informant 2: "The vehicle facilities used for parking are actually already inadequate so they cannot be used to go to distant villages with steep terrain. In my opinion, one of the factors that makes the obstacle for Puskesmas do a lot of work

c. Fund Variable

Informant 1: "Existing funds are available to service all puskesmas services so that the even distribution of services is still minimal. With the complex problems in remote health services, the APBD-P budget is more focused on remote areas like Sendrawoi. Informant 2: "Funds available to carry out services are sourced from Non-Physical DAK funds, which are used by Puskesmas services, the available funds are not fully sufficient for Health services".
Informant 3: "Health financing support such as Jamkesmas, Health Operational Assistance (BOK), Special Allocation Funds (DAK), Jampersal, and social assistance; POA Existing funds are certainly not enough to fulfil all puskesmas services.

d. Variable Health Problems

Informant 1: "Health issues that are a priority in Wondiboi District are prevention, and prevention of diseases such as malaria, Ispa, and diarrhea and other diseases in society or diseases that are classical and mushrooming in the lives of many people who are still far from healthy living behaviors, such as still littering, not yet aware of using latrines in homes that are available.

Informant 2: "In the top 10 diseases it is clear that the biggest diseases are Malaria, Ispa, Diarrhea, and what stands out also from the problem of clean and healthy behavior, they are still not aware of maintaining environmental hygiene, still throwing garbage carelessly, and not fully using toilet for defecation."
Informant 3: "The most problems in the service we encountered were classic problems, Malaria, Ispa, diarrhea, still littering, the surrounding environment that still looked dirty, still defecating carelessly even though there were latrines in every house."

a. Variables of Community Distance in Using Puskesmas Services

Informant 1: "It is admitted that the distance between the residents' residence to the Pustu is rather far away, the community must cross the river on foot. Not to mention if heavy rain means it cannot cross the river. Not to mention transportation that is difficult to add plus a lack of economic community. Sekurang - the lack of people only relied on traditional medicine before interpreting health services. Moreover, people are happier or more prioritizing to go to gardening later in the afternoon, then come home new if there is someone who is sick, looking for a health worker."

Informant 2: "The distance between the residence of the residents to the Pustu is very far they must come by foot and the most worrying must pass through Kalii. If it's not raining, it means you can pass it, if it's raining, you have to be patient. The opposite is also true for our officers to pick up emergency patients.

Informant 3: Most of the residents' houses are very far from the pustu they have to walk, if good weather means they can be reached. The trip can be up to 1-2 KM ... That is our obstacle in terms of service so that it cannot be denied that the low number of people visiting to the pustu is low. But that does not mean that the community does not use health services at all. They are looking for health cadres who have indeed been provided with makeshift drugs such as paracetamol and antalgin.

b. Service Factor Variables

Informant 1: ‘’ The problem experienced by the Sendrawoi Community Health Center is that in serving the health of the community in buildings and outside buildings, there is a lack of energy. The this felt when the officers had to get off the field, but at the same time had to provide services at the puskesmas that were of an emergency nature or could not be delayed. For example, there are patients who have time to give birth. In addition, there is a lack of adequate transportation, as explained above. Posyandu activities are also not maximal in Sendrawoi Sub-District because the community is encouraged to go to Posyandu because of the provision of supplementary food in the form of MP ASI ".Informant 2: "The service factor also still lacks the availability of medicines at Sendrawoi Health Center and equipment, we are still continuing to improve, in order to further improve services. Both in terms of energy, equipment and even more maximal service. We also do not fully service the officers who are not in place, this issue should be communicated with the stakeholders in this area. "

4. CONCLUSION

a. Personnel in the Determinants of Health Services in Remote Areas In Wondiboi Health Center, Teluk Wondama Regency (Case Study in Sendrawoi District Health Center) there is insufficient coverage according to existing needs because more personnel are employed in cities than in remote areas, the security of officers is not guaranteed live in pustu.

b. Means for Health Services in Remote Areas in Wondiboi Health Center Teluk Wondama Regency (Case Study in Sendrawoi District Health Center) The lack of health equipment and health support facilities (laboratories) in the puskesmas often disappoints people who eventually have to travel far and difficult. This situation is strengthening the interest of the community not to go to the puskesmas. Therefore, it is necessary to complete medical devices and consumables that support health services, especially for cases of diseases that occur in many auxiliary health centers.

c. Funds in Health Services in Remote Areas Wondiboi Health Center, Teluk Wondama Regency (Case Study in
Sendrawoi District Health Center) is available but not sufficient to carry out health services in all remote areas and tourism in Wondama Bay in general.

d. Health Problems in Health Services in Remote Areas Wondiboi Health Center, Teluk Wondama Regency (Case Study in Sendrawoi District Health Center) is Malaria, ARI, Diarrhea, because there is still low public awareness to maintain cleanliness.

e. Distance from Community Houses to Puskesmas in Remote Regional Health Services at Wondiboi Health Center, Wondama Bay District. (Case Study in Sendrawoi Sub-district) From the interviews, according to all the informants, the officers had done the maximum service possible, turned back to the role of infrastructure and transportation as one of the important physical components for remote areas. And if you find an emergency case that needs immediate help, the pustu is closed.

f. Service Factors in Remote Regional Health Services in Wondiboi Health Center, Wondama Bay District. (Case Study in Sendrawoi Sub-district) From the interviews, according to all the informants, the officers had done the maximum service possible, turned back to the role of infrastructure and transportation as one of the important physical components for remote areas. And if you find an emergency case that needs immediate help, the pustu is closed.

REFERENCES

- Dunn Wiliam, 2003, Analisis Kebijakan Publik, edisiKedua, Jakarta
- Profi 1 PuskesmasWondiboitahun 2016. DinkesKabupatenTelukWondama
- Suharmiati, dkk, 2012 Faktor – faktor yang mempengaruhikieterjjangkaunpelayananKesehatan di Puskesmas Daerah Terpencilperbatasan di kabupaten Sambas, Kalimantan

The Risk Factors Environment and Behavior Influence Diarrhea Incidence to Child in Abepura Hospital Jayapura City

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ABSTRACT

Background: The incidence of diarrhea in children under five is still high in the world, including in Indonesia, which if experiencing delays causes death. Risk factors associated with the incidence of diarrhea in children under five are caused by age, education, employment, source of drinking water, type of toilet, landfill, habit of washing children's hands and giving measles immunization.

Objective: To find out the environmental and behavioral factors associated with the incidence of diarrhea in infants in Abepura Hospital Jayapura City.

Research Method: Analytical with case control design. The population was all mothers of children under five year who experienced diarrhea as many as 774 toddlers with a total sample of 48 cases and 96 controls. Data were obtained using questionnaires and analyzed using chi square and logistic binary regression

Results: Environmental and behavioral factors associated with the incidence of diarrhea in toddlers in Abepura Hospital were maternal education (p-value = 0.032; OR = 2.548; CI95% (1.156 - 5.616), type of toilet (p-value = 0.013; OR = 2.686; CI95% (1.286 - 5.608) and hand washing habits (p-value = 0.016; OR = 2.556; CI95% (1.244 - 5.249). While factors not related to the incidence of diarrhea in infants are the type of toilet and hand washing habits.

Keywords: Diarrhea Incidence, Toddlers, Abepura Hospital, Jayapura City

1. INTRODUCTION

2017 World Health Organization (WHO) reported 1.7 million diarrhea in children. Diarrhea causes a second death in children under five with a mortality rate of 525,000 children. The morbidity and mortality due to diarrheal disease is caused by 780 million people living in inadequate clean water facilities and 2.5 billion due to unhealthy basic sanitation. Data from the Indonesian Health Profile in 2017 reported the incidence of diarrhea in Indonesia in health facilities as many as 7,077,299 cases and treated diarrhea as many as 4,274,790 cases (60.4%). The striking mapping of infectious diseases is the decline in the rate of prevalence of diarrhea by 3.5% in 2016. The incidence and period prevalence of diarrhea for all age groups in Indonesia is 7.0%. Nationally the mortality rate (CFR) in outbreaks of diarrhea in 2017 was 1.14%. Whereas the CFR target for Diarrhea Outbreaks is expected to be <1%. Nationally, the CFR of diarrhea outbreaks did not reach the program target (RI Ministry of Health, 2015).

The incidence of diarrhea in the Papua Province over the past three years, namely 2015 was 21.5 per 1,000 population (60,895 cases), 2016 was 18.9 per 1,000 population (50,049 cases) and 2017 was 13.8 per 1,000 inhabitants (36,624 cases)
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(Papua Provincial Health Office, 2017). The incidence of diarrhea in infants in Jayapura City in 2014 was 1,685 (39.46%) of 4,270 cases of diarrhea and in 2015 there were 2,034 (43.18%) out of a total of 4,710 cases of diarrhea handled (Jayapura City Health Profile, 2015).

Diarrhoeal diseases are caused by bacterial infections, parasites from contaminated feces and contaminated water. In addition, the cause of diarrhea in children is caused by malnutrition and contaminated sources of clean water from a distance of septic tanks, animal waste and microorganism contamination. In addition, other causes are caused by a lack of personal hygiene which contributes to diarrheal diseases (WHO, 2017).

Several research factors that caused the incidence of diarrhea in toddlers conducted by Arimbawa (2014) revealed that factors related to and significantly influencing the incidence of diarrhea in children under five were the behavior of drinking water cooking habits, while factors not related to the incidence of toddler diarrhea included hand washing habits, use of traditional water filtration, ownership of family latrines, access to water sources and landfills. In addition, from the research conducted by Marissa (2015), mentioning that sanitation factors that caused the incidence of diarrhea in children under five who used a case control approach obtained variable toilet conditions, site conditions waste, sewerage conditions (SPAL), family income and maternal behavior are related to the incidence of dehydrated diarrhea, while drinking water sources and education levels are not related to the incidence of moderate dehydrated diarrhea.

Abepura Regional General Hospital is a hospital located in Jayapura City. Clean water services in the city of Jayapura through regional water companies, but in some locations some people use well water, both dug and closed wells. Use of latrines (Profile of RSUD Abepura, 2017). Data from the Jayapura City Health Office, access to family clean water based on the results of the inspection was 0.99% using bottled water, 67.39% using plumbing, 17.8% using pump wells, 5.3% using dug wells, 7.42% using springs, 1.07% use Rainwater Shelter (PAH). Ownership of Basic Sanitation Facilities The number of family heads (KK) is 60,319 households. The ownership examination of basic sanitation was carried out on 43,732 households. Based on the results of the examination, there were 42,935 households (70.9%) and lately 59.4% of the data on toilet ownership. Ownership of trash cans is 1,647 households (63.7%) and declared healthy as much as 51.1%. Waste water management is 1,028 households (39.8%) and declared healthy (46.6%) (Profile of Jayapura City Health Office, 2018).

Medical record data of Abepura Hospital in 2017, cases of diarrhea in toddlers in the Children Room were 474 (47.16%) cases out of a total of 1,005 cases of diarrhea and in January - September 2018 there were 347 (44.83%) cases of a total of 774 children. Based on the description above, the researchers are interested in conducting research on "Environmental and behavioral factors that are associated with the incidence of diarrhea in infants in Abepura Hospital Jayapura City".

2. MATERIALS AND METHODS

2.1. Type of Research

This research is an observational study with a case control study design. An epidemiological study design is a relationship between exposures (risk factor) to a disease or health status by comparing case groups with a control group based on their exposure status. In case-control studies, effects (health status) were identified at this time, while risk factors were identified to occur in the past (retrospective) (Hasmi, 2016).

2.2. Place and Time of Research

1. Research Location

The location of the study will be carried out in Abepura Hospital Jayapura City.

2. Research Time
The study was conducted in October - November 2018.

3. Population and Samples

Population is the overall object of research or object under study (Saryono & Anggraeni, 2010). The sample is a portion of the population that is considered representative of the population (Notoatmodjo, 2012). The population and sample in this study were all mothers of children under five in January - September of 2018 as many as 347 (44.83%) cases of a total of 774 cases of diarrhea.

3. RESULTS

a. Relationship between mother’s age and the incidence of diarrhea in infants

Based on Table 1, it shows that of 48 cases there were 30 (62.5%) aged <25 years and as many as 18 (37.5%) aged> 25 years. While from 96 controls there were 55 (57.3%) aged <25 years and as many as 41 (42.7%) aged> 25 years. The results of the chi square test obtained p-value = 0.675> 0.05. This means that there is no relationship between the age of the mother and the incidence of diarrhea in infants in Abepura General Hospital.

b. Relationship between mother’s education and the incidence of diarrhea in infants

Based on Table 2, it shows that out of 48 cases there were 17 (35.4%) with low education and 31 (64.6%) highly educated. Whereas from 96 controls there were 17 (17.7%) with low education and 79 (82.3%) were highly educated. The results of the chi square test obtained p-value = 0.032 <0.05. This means that there is a relationship between the education of mothers and the incidence of diarrhea in children under five in Abepura General Hospital. Test results for odds ratio (OR) = 2.548; CI95% (1.156 - 5.616) which was interpreted that mothers with low education risk having their children affected by diarrhea 2.548 times higher than mothers who are highly educated.

c. Relationship between the work of mothers and the incidence of diarrhea in infants

Based on Table 3, it shows that out of 48 cases there were 11 (22.9%) working mothers and as many as 37 (77.1%) mothers did not work. While from 96 controls there were 20 (20.8%) working mothers and 76 (79.2%) mothers did not work. The results of the chi square test obtained p-value = 0.943> 0.05. This means that there is no relationship between the work of mothers and the incidence of diarrhea in children under five in Abepura General Hospital.

d. Relationship between drinking water sources and the incidence of diarrhea in infants
Based on Table 4, it shows that from 48 cases there were 9 (18.8%) sources of drinking water were lacking and as many as 39 (81.3%) sources of drinking water were good. While from 96 controls there were 19 (19.8%) sources of drinking water were lacking and as many as 77 (80.2%) sources of drinking water were good. The results of the chi square test obtained p-value = 1.000 > 0.05. This means that there is no relationship between drinking water sources and the incidence of diarrhea in infants in Abepura Hospital. The odds ratio (OR) = 0.935; CI95% (0.385 - 2.259) interpreted that the source of drinking water is not a risk factor with the incidence of diarrhea in infants.

**e. Relationship between type of toilet and the incidence of diarrhea in infants**

Based on Table 5, it shows that out of 48 cases there were 22 (45.8%) types of unhealthy latrines and 26 (54.2%) types of latrines were healthy. While from 96 controls there were 23 (24%) types of unhealthy latrines and 73 (76%) types of latrines were healthy. The results of the chi square test obtained p-value = 0.013 <0.05. This means that there is a relationship between the type of toilet and the incidence of diarrhea in infants in Abepura Hospital. The results of the odds ratio (OR) = 2.686; CI95% (1.286 - 5.608) interpreted that the type of latrine that is not healthy at risk for children under five is affected by diarrhea 2,686 times compared to the types of healthy toilets.

**f. Relationship between Garbage disposal and the incidence of diarrhea in infants**

Based on Table 6, it shows that out of 48 cases there are 28 (58.3%) less garbage disposal sites and as many as 20 (41.7%) good landfills. Whereas from 96 controls there were 48 (50%) less garbage disposal sites and as many as 48 (50%) good landfills. The results of the chi square test obtained p-value = 0.443> 0.05. This means that there is no relationship between landfills and the incidence of diarrhea in infants in Abepura Hospital. Test results for odds ratio (OR) = 1.400; CI95% (0.696 - 2.818) interpreted that landfills are not a risk factor with the incidence of diarrhea in infants.

**g. Relationship between hand washing habits and the incidence of diarrhea in infants**

Based on Table 7, it shows that out of 48 cases there are 24 (50%) habits of washing hands less and as many as 24 (50%) habits of washing hands are good. While from 96 controls there were 27 (28.1%) habits of washing hands less and as many as 69 (71.9%) habits of washing hands were good. The results of the chi square test obtained p-value = 0.016 <0.05. This means that there is a relationship between the habit of washing hands with the incidence of
diarrhea in infants in Abepura Hospital. The results of the odds ratio (OR) = 2.556; CI95% (1.244 - 5.249) interpreted that hand washing habits that are less risky for children under five are diarrhea 2.556 times higher than good hand washing habits.

h. Relationship between measles immunization and the incidence of diarrhea in infants

Table 8. The relationship between measles immunization and the incidence of diarrhea in infants in Abepura Hospital in 2018

<table>
<thead>
<tr>
<th>No measles immunization</th>
<th>Incidence diarrhea in infants n %</th>
<th>Control n %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>48</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>96</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>144</td>
<td>100</td>
</tr>
</tbody>
</table>

Based on Table 8, showing that of 48 cases there were 5 (10.4%) no immunization against measles and as many as 43 (89.6%) had measles immunization. While from the 96 controls available 3 (3.1%) none gave measles immunization and as many as 93 (96.9%) had measles immunization. The results of the chi square test obtained p-value = 0.117 > 0.05. Rewards for providing assistance to children in Abepura Hospital. The odds ratio (OR) test = 3.605; CI95% (0.824 - 15.7776) interpreted as giving measles immunization is not a risk factor with the incidence of diarrhea in infants.

4. DISCUSSION

4.1. Relationship between Mother's Age and Diarrhea in Toddlers

The results showed that there was no relationship between the age of the mother and the incidence of diarrhea in children under five in Abepura General Hospital. The results of this study contradict Prita's (2014) study, namely there was no relationship between age and the incidence of diarrhea in infants. This causes all mothers to have affection for their daughter, so because the mother must be able to remember well. But this is supported by socio-economic conditions such as income and sanitation of healthy homes. The results of the study revealed that in the case group 62.5% of mothers visited <25 years and in the control group 37.5% were received ≥ 25 years. This shows that in the old group there is no risk that the child can improve diarrhea. This is also evident from the results of the odd test ratio not in accordance with diarrhea factors.

Age is one of the strongest variables used to predict differences in disease, conditions, and health problems, and because of the comparability of each variable the power becomes easily seen (Maryam, 2014). According to Gibson (1997) in Novrianda (2014), that age is an individual factor that is increasingly growing in age, there will be more maturity and more information. However, in this research, it was not in accordance with the above opinion which could consider the facts about the mother in relation to toilet hygiene and had the interest in washing her hands before and handling hand washing with good hygiene of her toddler when playing, eating and after bowel movements and BAK.

Age is a character that is related to human nature that can make a difference in the results of research or that can help determine the relationship of causes of illness, injury conditions, chronic diseases and other diseases that can make human suffering (Notoatmodjo, 2011). The results of research obtained from young mothers have one child under five, so that child supervision is more focused and new experiences become mothers, so mothers are encouraged to seek new knowledge about good care for toddlers, while for mothers asked >25 years have more than one child is a mother’s experience in caring for a toddler or being cared for well from her experience.

4.2. Relationship between Mother's Education and Diarrhea in Toddlers

The results obtained were related to the education of mothers with the incidence of diarrhea in infants in Abepura Hospital (p-value = 0.032). The results of this study contradict the research of Maidartati (2017), namely that there is a relationship between
education and the incidence of diarrhea in infants which causes education to influence one's thinking in receiving information.

Education is the process of changing attitudes and behavior of a person or group of people in an effort to mature people through efforts to improve and train (Prayoto, 2014). The results of the study obtained in the group reported that 35.4% had low education and in the control group 17.7% had low education. This shows that higher education compared to mothers with low education. This is evidenced from the results of the odd ratio test of mothers with low education, 2.548 times more than highly educated mothers. Education affects the learning process; the higher one's education makes it easier for this person to receive information, both from other people and from the mass media. The more information entered, the more knowledge gained about diarrheal diseases (Notoatmodjo, 2011).

Education that can increase intellectual maturity someone and is an important factor in the withdrawal process information, improve insight and ways of thinking which will subsequently provide perceptions of knowledge, perceptions and attitudes determine someone to make a decision to act. A highly educated mother can find out about her baby's health and find out and ask those who are more understanding (doctors and midwives) who are experienced about how to maintain health so that they don't get sick easily. So from that mother's education is important in balit care, because mothers with low education are more closed and do not want to find information about how to maintain good children's health (Handayani, 2013).

4.3. Relationship between Mother's Work and Diarrhea in Toddlers

The results of the study obtained were not related to mothers in hospitals in Aepura Hospital (p-value = 0.943). The results of the study contrast with Cahyaningrum's study (2015), there was no relationship between the work of mothers and the incidence of diarrhea in their toddler children. Caused working mothers have not entrusted to caregivers. So that children's hygiene is sufficiently recovered. The work that must be done by someone in supporting and maintaining their life and livestock life. Work is also a means for someone to get information from their environment. The more positive aspects of the object that is recognized, the more positive the attitude towards the object will be (the Maramis, 2013).

Thank you Mothers who work as public / state employees on average have higher education than mothers who do not work. Types of work that have an interest in the ability to access in the health sector with the ability to prevent disease. Mothers who work will provide a better economic impact on the family, so that it will provide better conditions. However with working status then automatic attention to the baby it will also reduce the focused time to work. Working mothers will reduce their limited time together with the child, the result is that the child is not monitored or what things can be improved so that they can improve Risk of pain, a special danger transmitted by mouth because toddlers will increase the oral phase, which is like sucking fingers, often insert objects into his mouth (Aulia, 2007)

Mothers who do not work are generally highly educated in mothers who work in low education, mostly selling or trading in small scale, which increases the family income of the mother. The lack of maternal income for information sources is now easier to obtain from electronic media.

4.4. Relationship between Source of Drinking Water and Diarrhea in Toddlers

The results showed that there was no relationship between drinking water sources and the incidence of diarrhea in infants in Aepura Hospital (p-value = 1,000). The results of this study are in line with the research conducted by Dini (2013) in the Kambang Puskesmas in Lengayang Subdistrict, Pesisir Selatan District, revealing that no relationship between the
source of drinking water used can cause diarrhea in infants.

The main source of drinking water is one of the sanitation facilities that is not less important than the incidence of diarrhea. Most infectious germs that cause diarrhea are transmitted through the oral faecal pathway. They can be transmitted by entering into the mouth, liquids or objects contaminated with feces, such as drinking water, fingers, and food prepared in cans containing polluted water (Ministry of Health, 2012).

According to Adnani (2015), some healthy drinking water requirements for physical requirements: clear (colorless, tasteless, temperature below the outside air temperature), bacteriological requirements: needed in 100 cc of air less than 4 pieces of E. coli bacteria. Chemical requirements: contain certain substances in certain quantities as well, namely: Fluor (F), Chlorine (Cl), Arsenic (As), copper (Cu), Iron (Fe), organic matter, PH (acidity).

The causes of diarrhea in humans are related to the physical quality of the water they consume for daily drinking. Using contaminated drinking water in this case water that has been polluted from its source or when stored at home can cause diarrhea. So, the physical quality of water seen from the indicators of smell, taste, turbidity, temperature, color, and the amount of dissolved, complete solids can directly contain bacteriological composition and chemicals in air. This event can be caused by contamination of chemicals with certain substances, especially if the ingredients are deep high doses, it can cause diarrhea (Indonesian Ministry of Health, 2011). 18.8% of drinking water sources are lacking and in the control group 19.8% of drinking water sources are lacking. This shows the same opportunity as the incidence of diarrhea in her toddler child. This is a source of drinking water that is used because it uses gallon water that uses sterilization and water The Drinking Water Company (PAM) that takes surface water and provides good water quality through several processes, making it feasible for use by the community.

4.5 Relationship between Latrine Types and Diarrhea in Toddlers

The results showed that there was a relationship between the type of toilet and the incidence of diarrhea in infants in Abepura Hospital (p-value = 0.013). The results of this study are in line with the research conducted by Marisa (2015) that there is a relationship between the type of latrine and the incidence of diarrhea, where most of the latrine ownership uses public latrines. The results of the study in the case group were 45.8% of the types of latrines which were not healthy and in the control group there were 24% types of latrines which were not healthy. The results of the odds ratios are interpreted that the types of latrines that are not healthy at risk for children under five are diarrhea 2,686 times compared to the types of healthy toilets.

The results of this study found that the use of respondent latrines was a type of squatting and sitting. Toddlers who experience diarrhea are known to have latrine ownership in the unhealthy category (45.8%) because latrines are difficult to flush or slow down and dirty, so they become a breeding ground for bacteria that cause diarrhea. The toilet facilities are part of the sanitation business which is quite important. In terms of environmental health, unclean sewage disposal will be able to pollute the environment, especially land and water sources. Disposal of non-sanitary feces will cause a variety of diseases, especially diarrhea. In addition, toddlers who experience diarrhea with healthy toilet criteria are caused by the use of water that does not meet the requirements because they use well water that has not been tested for healthy water requirements and do not apply hygiene behavior after their toddler defecates by washing without using soap.

The results of the study also found that the use of latrines that were unhealthy and toddlers did not experience diarrhea was caused by after defecating, the mother applied good hygiene practices by using the
correct method by using soap and washing her hands after defecating. The results of this study are in line with the research of Sukut (2013) that the application of mothers who lack hygiene in plunging toddlers and using less clean water is at greater risk than the ownership of unhealthy latrines. This happens because germs or bacteria are lower by practice or the application of good hygiene after defecation. The results showed that there was no relationship between landfills and the incidence of diarrhea in children under five in Abepura Hospital (p-value = 0.443). The results of this study are in line with Marisa's (2015) research that trash that does not meet the relevant requirements is not related to the incidence of diarrhea.

Waste is a material or solid object that is no longer used by humans, or solid objects that are no longer used in human activities and disposed of (Alamsyah, 2014). According to Mubarak and Chayati (2011), the trash conditions include made of waterproof material and not easy to leak, have a lid that is easily opened, closed, easily emptied of contents and easy to clean and its size is arranged so that it can be carried by one person. The results showed that in the case group there were 58.3% less waste dumps, while in the control group there were 50% less waste disposal sites. this shows that there is an equally risky opportunity for the incidence of diarrhea in their toddler children. Overall the respondents already have a trash can, but have not fulfilled sanitation, ie there is no trash lid. Toddlers who experience diarrhea with less garbage disposal (58.3%) this is due to garbage in the open stimulates flies to perch. Whereas in respondents whose trash bins fulfill the requirements but are slow to dispose of garbage> 3 days, it causes garbage to become a vector and spread in the home environment and become a children's playground.

5. CONCLUSION
From the results of the research and discussion, it can be concluded as follows:

1. There is no correlation between the age of the mother and the incidence of diarrhea in infants in Abepura Hospital (p-value = 0.675; OR = 1.242; CI95% (0.610 - 2.529).
2. There is an educational relationship between mothers and the incidence of diarrhea in infants in Abepura Hospital (p-value = 0.032; OR = 2.548; CI95% (1.156 - 5,616).
3. There is no relationship between the work of the mother and the incidence of diarrhea in infants in Abepura Hospital (p-value = 0.943; OR = 1.130; CI95% (0.491 - 2.601).
4. There is no relationship between drinking water sources and the incidence of diarrhea in infants in Abepura Hospital (p-value = 1,000; OR = 0.935; CI95% (0.385 - 2,259).  
5. There is a relationship between the type of toilet and the incidence of diarrhea in infants in Abepura Hospital (p-value = 0.013; OR = 2.686; CI95% (1,286 - 5,608).
6. There is no relationship between landfills and the incidence of diarrhea in infants in Abepura Hospital (p-value = 0.443; OR = 1,400; CI95% (0.696 - 2,818).

REFERENCES
• Arimbawa IW (2014). Hubungan Faktor Perilaku dan Faktor Lingkungan dengan kejadian diare pada balita di Desa Sukawati, Kabupaten Gianyar Bali Tahun 2014. E- ISSN: 2503-3638, Print ISSN: 2089-9084 ISM Vol. 6 No.1, Mei-Augustus, HAL 8-15
Irawati Magdalena et al. The Risk Factors Environment and Behavior Influence Diarrhea Incidence to Child in Abepura Hospital Jayapura City

- M Idrus, A Mallongi, J Ibrahim, Surveillance System Model for Pulmonary Tuberculosis Suspected in Pangkep Region, Indonesia, Current Research in Tuberculosis 9, 1-7, 2017
- SS Russeng, Lalu Muhammad saleh, Devinthra Virani, Ade Wira Listrianti Latief,


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Determinant Factors of Incidence of Helminthiasis among Student of SD Inpres 42 Taman Ria in Kelurahan Wosi Manokwari District

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ABSTRACT

Background: The behavior of the people in the Wosi village still pollutes the environment with inappropriate disposal of feces, i.e. at times in rivers which is used for bathing, washing clothes and household appliances.

Methods: This study is an observational analytic study that aims to determine the effect of two or more variables. This study explains the relationship affects and is influenced by the variables to be studied. Using a cross sectional study approach with data collection carried out simultaneously at one time.

Results: There is no sex relationship with the incidence of helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency (p-value 0.734; RP = 1.080; CI95% (0.793 - 1.472). There is no tribal relationship with the incidence of helminthiasis in students of Taman Ria Elementary School 42 in Wosi Village, Manokwari Regency (p-value 1.000; Rp = 1,012; CI95% (0,740 - 1,385). There is a habitual defecation relationship with helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency (p-value 1,000; Rp = 1,012; CI95% (0,740 - 1,385). There is a habit of washing hands and the incidence of helminthiasis in students of Inpres 42 Park Ria Elementary School in Wosi Village, Manokwari Regency (p-value 0,000; RP = 2,081; CI95% (1,642 - 2,638). There is a relationship between the habit of washing hands and the incidence of helminthiasis in students of Inpres 42 Park Ria Elementary School in Wosi Village, Manokwari Regency (p-value 0.007; RP = 1.557; CI95% (1,154 - 2,100). There is a relationship between snacking habits and the incidence of helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency (p-value 0.016; RP = 1.496; CI95% (1,093 - 2,046). There is a relationship between the habit of using footwear and the incidence of helminthiasis in students of SD 42 Inpres Taman Ria in Wosi Village, Manokwari Regency (p-value 0.004; RP = 1.603; CI95% (1,172 - 2,192).

Conclusion: The dominant factor associated with helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency is the habit of defecation, hand washing habits and the habit of playing on the ground.

Keywords: Incidence of helminthiasis, footwear, defecation, hand washing

INTRODUCTION

Based on data from the Jayapura City Health Service in 2006 there were 891 helminthic infections with helminthiasis and in 2007 it increased to 936 people with helminthiasis. To support data on helminthiasis infection, the City Health Office of Jayapura conducted land checks in the Central Koya area on 15 houses. 9 houses were declared positive for worm eggs. The activity was in fact only carried out in 2006. Whereas in 2007 and 2008 there was no land inspection (http://cahyowu.blogspot.com/2009).

Research conducted by Romi Purnawati in elementary school children at Koso Koya Elementary School Abepura District, Jayapura obtained 55.4% worm positive results, with the most infections by Hookworm 52.8%, Ascaris lumbricoides 13.9% and Trichuris trichiura 8.3%. While
the research conducted by Yuanita Soraya Amin in preschool kindergarten children in the Waena Community Health Center work area, Jayapura received 78% positive helminthiasis results, and the type of worm that infected 78 kindergarten children preschool age 100% Ascaris lumbricoides.

Based on the results of research conducted by the authors on elementary school children in Wosi in 2009, helminthiasis was 65.1%. The results of the preliminary survey at Wosi Village and Sanggeng Urban Village are some elementary school children during school breaks, meals do not wash their hands, and some elementary school children play in the school yard, some do not use footwear / shoes. Dina Bisara and Mardiana's research in 2010 around the former coal mining settlement in Mentewe District, South Kalimantan Tanah Bumbu Regency. From the results of the study found in 106 primary school children examined, as many as 18 children (17%) were positive for worms, with parasite rates of 7 children (38.9%) Ascaris lumbricoides, 2 children (11.1%) Trichuris trichiura, 3 children (16.7%) Hookworm, 5 mix children (27.8%), namely; 3 children were found with 2 types of Ascaris lumbricoides and Trichuris trichiura worms and 2 children were found with 2 Ascaris lumbricoides and Hymenolepis nana worm species (https://media.neliti.com)

The population of Manokwari Regency is 170,897 people, the total population of Wosi is 20,249. Most of the people's livelihoods are civil servants, the private sector, ABRI and gatherers. Environmental factors and behavior of people in Manokwari District make the greatest contribution to the degree of health, especially in coastal areas and villages. The behavior of the people in the wosi village still pollutes the environment with inappropriate disposal of feces, i.e. at times in rivers which is used for bathing, washing clothes and household appliances. And there is a high level of humidity, so that the environmental conditions are very influential in the transmission of helminthiasis.

Wosi is one of the regions in the Wosi sub-district. The settlement is quite dense and slum. In some places there are still a number of small children who defecate in any place like in a gutter (sewer) and when it rains the water can overflow into the surrounding area. There are several sub-districts in Wosi, including SD Inpres Taman Ria Wosi, SDN 06 Wosi. The habit of children in school often releases footwear when playing during school breaks. The reason the authors conducted a study of the prevalence of soil-borne worm determinant factors in elementary school students in Wosi Village, Manokwari District was from the background of the above problems, because there were no inspection and reporting data at the Manokwari District Health Office, and so far in 14 Puskesmas worm disease in the service.

2. MATERIALS AND METHODS
2.1. Type of Research
This study is an observational analytic study that aims to determine the effect of two or more variables (Sugiyono, 2013). This study explains the relationship affects and is influenced by the variables to be studied. Using a cross sectional study approach with data collection carried out simultaneously at one time (Notoatmodjo, 2012).

2.2 Place and Time of Research
The place of the study was conducted at SD Inpres Taman Ria Wosi and SDN 06 Wosi and the time of the study was conducted in September 2018.

2.3. Population and Study Samples
The population in this study were elementary students in grades 1- 5 of SD Inpres 42 Taman Ria Wosi, SD Inpres 42 Kelurahan Wosi as many as 174 people. The sampling technique uses saturated sampling or as many as 174 total populations.
3. RESULTS

Bivariate Analysis

a. Sex relations with helminthiasis

Table 1. Sex relations with helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency

<table>
<thead>
<tr>
<th>No</th>
<th>Sex</th>
<th>Incidence of helminthiasis</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Yes</td>
<td>No</td>
<td>No</td>
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<td>85</td>
<td>48,9</td>
<td>89</td>
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</tr>
</tbody>
</table>

p-value = 0.734; RP = 1.080; CI95% (0.793 - 1.472)

Table 1 shows that out of 97 children of male sex there were 49 people (50.5%) experiencing intestinal worms and 48 people (49.5%) not having worms. Of the 77 female children there were 36 people (46.8%) experiencing intestinal worms and 41 people (53.2%) not having worms. The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0.734 or p > α (0.05). This means that there is no age relationship with helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency.

b. Tribal relationships of children with helminthiasis

Table 2. Tribal relationship between children and helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency

<table>
<thead>
<tr>
<th>No</th>
<th>Tribal</th>
<th>Incidence of helminthiasis</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>Papua</td>
<td>32</td>
<td>49,2</td>
<td>33</td>
</tr>
<tr>
<td>2</td>
<td>Non Papua</td>
<td>53</td>
<td>48,6</td>
<td>56</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>48,9</td>
<td>89</td>
<td>51,1</td>
</tr>
</tbody>
</table>

p-value = 1.000; RP = 1.012; CI95% (0.740 - 1.472)

Table 2 shows that out of 65 children from Papuan tribes there were 3 people (49.2%) who experienced intestinal worms and 33 people (50.8%) had no worms. Of the 109 children from the Non Papuan tribe there were 53 people (48.6%) experiencing intestinal worms and 56 people (51.4%) not having worms. The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 1.000 or p > α (0.05). This means that there is no tribal relationship with the incidence of helminthiasis in the students of SD 42 Inpres Taman Ria in Wosi Village, Manokwari Regency. Prevalence ratio (RP) = 1.012; CI95% (0.740 - 1.385) which was interpreted to mean that the tribe was not significant with helminthiasis in children.

c. Relationship between defecation habits and helminthiasis

Table 3. Relationship between defecation habits and the incidence of helminthiasis in 42 Inpres Elementary School students at Taman Ria in Wosi Village, Manokwari Regency

<table>
<thead>
<tr>
<th>No</th>
<th>Defecation habits</th>
<th>Incidence of helminthiasis</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>Bad</td>
<td>22</td>
<td>88</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Good</td>
<td>63</td>
<td>42,3</td>
<td>86</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>48,9</td>
<td>89</td>
<td>51,1</td>
</tr>
</tbody>
</table>

p-value = 0.000; RP = 2.081; CI95% (1.642 - 2.638)

Table 3 shows that of the 25 children with poor latrine habits there were 22 people (88%) experiencing intestinal worms and 3 people (12%) not having worms. Of the 149 children with good latrine habits there were 63 people (42.3%) who experienced intestinal worms and 86 people (57.7%) had no worms. The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0,000 or p < α (0.05). This means that there is a relationship between the habit of defecation and the incidence of helminthiasis in students of Inpres 42 Park Ria Elementary School in Wosi Village, Manokwari Regency. The prevalence ratio (RP) = 2.081; CI95% (1.642 - 2.638) interpreted that poor bowel habits tend to be exposed to worms by 2,081 times compared to children who have good defecation habits.

d. Relationship between Hand Washing habits and helminthiasis

Table 4. Relationship between Hand Washing habit and the incidence of helminthiasis in 42 Inpres Elementary School students at Taman Ria in Wosi Village, Manokwari Regency

<table>
<thead>
<tr>
<th>No</th>
<th>Hand Washing Habit</th>
<th>Incidence of helminthiasis</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>Bad</td>
<td>44</td>
<td>62</td>
<td>27</td>
</tr>
<tr>
<td>2</td>
<td>Good</td>
<td>41</td>
<td>39,8</td>
<td>62</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>48,9</td>
<td>89</td>
<td>51,1</td>
</tr>
</tbody>
</table>

p-value = 0.007; RP = 1.557; CI95% (1.154 - 2.100)

Table 4 shows that of the 25 children with poor handwashing habits there were 22 people (88%) experiencing intestinal worms and 3 people (12%) not having worms. Of the 149 children with good handwashing habits there were 63 people (42.3%) who experienced intestinal worms and 86 people (57.7%) had no worms. The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0,000 or p < α (0.05). This means that there is a relationship between the habit of handwashing and the incidence of helminthiasis in students of Inpres 42 Park Ria Elementary School in Wosi Village, Manokwari Regency. The prevalence ratio (RP) = 2.081; CI95% (1.642 - 2.638) interpreted that poor bowel habits tend to be exposed to worms by 2,081 times compared to children who have good defecation habits.
Table 4 shows that out of 71 children with bad hand washing habits there were 44 people (62%) experiencing intestinal worms and 27 people (42.3%) not having worms. Of the 103 children with good handwashing habits, there were 41 people (39.8%) experiencing intestinal worms and 62 people (60.2%) not having worms. The results of the chi square statistical test on the significance value of 95% \( (\alpha = 0.05) \) obtained \( p \)-value 0.007 or \( p < \alpha (0.05) \). This means that there is a relationship between the habit of washing hands and the incidence of helminthiasis in students of Inpres 42 Park Ria Elementary School in Wosi Village, Manokwari Regency. Prevalence ratio (RP) = 1.557; CI95% (1.154 - 2.100) which was interpreted to mean that poor handwashing habits tended to be affected by intestinal worms by 1.557 times compared to children who had good hand washing habits.

e. Relationship to Snacking with helminthiasis

Table 5 shows that out of 85 children with bad snacking habits there were 50 people (61%) experiencing intestinal worms and 32 people (39%) not having worms. Of the 92 children with good habits of using footwear there were 35 people (38%) experiencing intestinal worms and 57 people (62%) not having worms. The results of the chi square statistical test on the significance value of 95% \( (\alpha = 0.05) \) obtained \( p \)-value 0.016 or \( p < \alpha (0.05) \). This means that there is a relationship between snacking habits and the incidence of helminthiasis in students of Inpres 42 Park Ria Elementary School in Wosi Village, Manokwari Regency. Prevalence ratio (RP) = 1.496; CI95% (1.093 - 2.046) interpreted that poor snacking habits tended to be affected by worms by 1.496 times compared to children who had good snacking habits.

f. Relationship between Habits of Using Footwear and helminthiasis

Table 6 shows that out of 82 children with habit of using bad footwear there were 50 people (61%) experiencing intestinal worms and 32 people (39%) not having worms. Of 92 children with good habits of using footwear there were 35 people (38%) experiencing intestinal worms and 57 people (62%) not having worms. The results of the chi square statistical test on the significance value of 95% \( (\alpha = 0.05) \) obtained \( p \)-value 0.004 or \( p < \alpha (0.05) \). This means that there is a customary relationship between using footwear and helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency. Prevalence ratio (RP) = 1.603; CI95% (1.172 - 2.192) which is interpreted that the habit of using bad footwear tends to be affected by worms by 1.496 times compared to children who have a habit of using good footwear.

4. DISCUSSION

4.1 Sex relations with helminthiasis

Based on the results of the study, it was found that 50.5% of children who were male had intestinal worms while 46.8% of them were female worms. This shows that there is a proportion of the same number that is likely to have an incidence of helminthiasis in SD Inpres 42 Park Ria elementary students in Wosi Village, Manokwari Regency. The chi square
statistical test results on significance values were stated to have no relationship to age with helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency and were protective factors which meant that the absence of relationship was influenced by other stronger variables namely latrine habits, hand washing and the habit of playing on the ground.

This research is in line with the research conducted by Derek (2018) in students at SD Negeri 58 Manado with the incidence of infection Intestinal worms revealed that there was no sex relationship with helminthiasis in elementary students. Based on observations that there is no association with the incidence of helminthiasis between male and female sex is caused by their playing habits are almost the same that has more activity to contaminate the soil. Intestinal worm infections are more common because children who consume contaminated food and beverages from poor hygiene behavior, especially in washing hands after playing on the ground.

4.1 Tribal relationships of children with helminthiasis

Various ethnic groups can differ in habits, lifestyle and so on which can cause differences in morbidity or mortality. Social and cultural aspects greatly influence the life patterns of all humans and influence the behavior patterns of children (Notoatmodjo, 2011). The results were obtained from the results of the chi square statistical test obtained p-value 1,000 which stated no tribal relationship with the incidence of helminthiasis in students of SD 42 Inpres Taman Ria in Wosi Village, Manokwari District and was a protective factor with helminthiasis.

According to Peter (2003) in Yuliani (2007) risk factors that influence worm disease include ethnicity, culture and family. Haisl research found that in children from the Papuan tribe there were 49.2% experiencing intestinal worms while children from non-Papuan tribes had 48.6% experiencing worms. This shows a proportion of the incidence of helminthiasis which is not much different.

The absence of a tribal relationship between children and helminthiasis is caused because the child has mingled and can adapt to one another so that there are similarities in behavior in behavior, including in play and hygiene behavior. In addition, there are similarities in the nature of housing and sanitation where technological and cultural developments, education and immigration can have an influence on the conditions of home sanitation and the behavior of local indigenous people.

4.2 Relationship between defecation habits and helminthiasis

The results of the study showed that out of 174 children there were 25% of children having poor BAB habits. Bad defecation is caused when children play outdoors, especially at times or in the garden and feel defecation; the child is usually defecating at times. Respondents with bad latrine habits as much as 88% experienced worms while respondents with good latrine habits as many as 42.3% experienced intestinal worms. The proportion of helminthiasis is lower in respondents who have good bowel habits in latrines.

The statistical test results show that there is a relationship between defecation behavior and helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency and from the results of the prevalence ratio test it is interpreted that poor BAB habits tend to be affected by 2,081 times compared to children who have defecation habits well. This research is in line with previous research by Irawati (2013) which states that poor defecation / bowel habits are 6.3 times more likely to experience intestinal worms than children who have good defecation / bowel habits.

Poor defecation behavior in any place is thought to be a risk factor for worm infections. Theoretically, worm eggs need
soil media for their development. The presence of worm eggs in the stools of patients who carry out defecation activities in open soil further increases the chances of transmitting worm larvae to surrounding communities. Notoatmodjo (2011) states that the role of feces in the spread of disease is very large. On the side can be direct contaminating food, drinks, vegetables, water, soil, insects (flies, cockroaches, etc.) and parts of the body can be contaminated by the stool.

This study also obtained as many as 42.3% of children who had bowel habits in the toilet both had worms. This can occur due to environmental sanitation factors as stated by Soedarto (2010), epidemiologically, there are several factors that influence the incidence of helminthiasis, namely environmental sanitation and human factors. In dealing with intestinal worms, supervision of water and food sanitation is very important, because the transmission of worms occurs through contaminated water and food. Environmental sanitation is an important thing that must be considered. To achieve life skills in the community, it must pay attention to clean water supply, toilet and bathroom management, and waste management. The researcher assumed that even though the child bowel habit was bad, it caused the child not to wash their hands with soap, so it was more likely to experience intestinal worms due to germs or eggs.

The worm is still stuck in the hand. This is in accordance with the theory Hendrik L. Blum cited by Notoatmodjo (2011) that efforts to prevent intestinal worms are always washing hands with soap after from the bathroom / toilet, always washing hands with soap after playing, before handling food, hookworm infection can be avoided by always wearing footwear, use disinfectant every day in the shower and defecation area.

4.3 Relationship to Hand Washing with helminthiasis

Children are most often attacked by worms because, usually their fingers are inserted into the mouth or eat without washing hands. Children must be accustomed to washing hands before eating so that worm larvae are not swallowed with food. The most common worms are roundworms, hookworms, tapeworms and pinworms (Ambarsari, 2012). The results showed that there were 62% of children with bad hand-washing habits who experienced intestinal worms while children with good hand-washing habits had 39.8% having worms. The statistical test results revealed that there was a relationship between habit of washing hands with helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency and from the results of the prevalence ratio tests interpreted that poor hand washing habits tended to be 1,557 times compared to children who had habits good hand washing.

This is reinforced by Eryani’s research (2013), that students infected with worms generally have a habit of washing hands that are lacking accompanied by long fingernails, so that worm eggs are often found in students’ nails that are long and dirty. This is also stated by Bunda (2012), some prevention of intestinal infections is washing hands before and after eating or after using the toilet using soap (ordinary cleaning fluid is not enough), always maintain cleanliness and halal food to be consumed, make sure nails are always maintained and clean, cut if long, and not bite the nails, diligently bathing 2 times a day, make it a habit to routinely clean the house and bathroom, wash the food ingredients and clothes ironed after washing.

According to the Ministry of Health (2006) in Irawati (2013) also explained that roundworm eggs come out with feces in a damp place and are not exposed to sunlight, these eggs grow into infective. Roundworm infection occurs when an infective egg enters through the mouth with food or drinks and can also go through dirty hands.
(contaminated with soil by worm eggs). From this study there were also children with good hand washing habits by washing hands before eating, after bowel movements and after playing on the ground but experiencing worms. This is because children are still infected even though they have washed their hands because they only wash their hands with water without using soap, so there are still germs that stick to the hands. There were also respondents who according to them later when they will eat their new staple food wash their hands while at the time of going to eat other than staple food which is snacks; they do not wash their hands first.

This is in accordance with the theory of Suzannita (2013) who said hand washing using water is a common practice throughout the world. But apparently this habit is less effective compared to hand washing using soap because the soap can shed fat and dirt containing germs. With correct use, all soaps have the same effectiveness in shed germs that cause disease.

### 4.4 Relationship to Snacking with helminthiasis

The results of the study showed that it was mostly snacks for students of Inpres 42 Taman Ria Elementary School in Wosi Village, Manokwari Regency, where bad children's snacking habits were 49.9%. Good snacking habits 51.1% buy snacks in a closed place like in a canteen while bad snacking habits are caused by children buying snacks in the open or on the roadside.

This can cause students to become infected with helminthiasis because they have a habit of buying snacks that do not meet the requirements. Students who tested positive for helminthiasis tended to buy snacks that were not closed and were in an environment that allowed transmission of worm eggs (Muchlisah, 2016).

Children with bad snacks are 62% having worms while with good snacks there are 39.5% experiencing worms. The statistical test results revealed that there was a relationship between snack habits and helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency and the results of the prevalence ratio tests interpreted that poor snacking habits tended to be 1,496 times compared to children who had snack habits well.

Research in line with what Muchlisah (2016) did for elementary school children at Athirah Bukit Baruga Makassar revealed the same thing that poor children's snacking habits caused children to become infected with helminthiasis. The results of the research at Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency who have good snacking habits infected with worms caused by hygiene behavior, in which children do not wash their hands before holding snacks consumed. The highest snacking habits in children while in the school environment and available at the SD Inpres 42 Taman Ria canteen, but there are no hand washing facilities such as sinks and availability of soapy water, this causes children to consume snacks without washing their hands and children who have good washing behavior hands in the bathroom are available with water, but do not have soap, so children who have good behavior can also be at risk of worms because washed hands are not clean or germs are not reduced by cleaning soap. Whereas in some children who do not suffer from helminthiasis, they will have behavior using paper or tissue provided by the teacher to consume snacks they eat. This needs attention from the school in order to provide sanitation hygiene facilities in the form of a sink and soap, so that children easily wash their hands before and after meals.

### 5. CONCLUSION

Based on the results of the discussion it can be concluded as follows:

1. There is no sex relationship with the incidence of helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency (p-value
Determinant Factors of Incidence of Helminthiasis among Student of SD Inpres 42 Taman Ria in Kelurahan Wosi Manokwari District

1. There is no tribal relationship with the incidence of helminthiasis in students of Taman Ria Elementary School 42 in Wosi Village, Manokwari Regency (p-value 1.000; Rp = 1.012; CI95% (0.740 - 1.385).

2. There is a habitual defecation relationship with helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency (p-value 0.000; RP = 2.081; CI95% (1.642 - 2.638).

3. There is a relationship between the habit of washing hands and the incidence of helminthiasis in students of Inpres 42 Park Ria Elementary School in Wosi Village, Manokwari Regency (p-value 0.007; RP = 1.557; CI95% (1.154 - 2.100).

4. There is a relationship between snacking habits and the incidence of helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency (p-value 0.016; RP = 1.496; CI95% (1.093 - 2.046).

5. There is a relationship between the habit of using footwear and the incidence of helminthiasis in students of SD 42 Inpres Taman Ria in Wosi Village, Manokwari Regency (p-value 0.004; RP = 1.603; CI95% (1.172 - 2.192).

6. The dominant factor associated with helminthiasis in Taman Ria Elementary School 42 students in Wosi Village, Manokwari Regency is the habit of defecation, hand washing habits and the habit of playing on the ground.

REFERENCES
- A Mallongi, R La Ani, AB Birawida, 2017. Spatial Lead Pollution in Aquatic Habitats and the Potential Risks in Makassar Coastal Area of South Sulawesi, Indonesia, Jurnal Kesehatan Lingkungan Indonesia
Mince Wilil et al. Determinant Factors of Incidence of Helminthiasis among Student of SD Inpres 42 Taman Ria in Kelurahan Wosi Manokwari District


Case Detection Rate by Health Employee Tuberculosis Program in Puncakjaya District

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Corresponding Author: Anwar Mallongi

ABSTRACT

Introduction: case detection (CDR) of tuberculosis in Puncak Jaya District is still low from the national target achievement of 70% due to barriers to human resources, training, methods, active suspicious TB screening, geographical location, costs, facilities and infrastructure and supervision.

Research of subject: to determine Case Detection Rate (CDR) by officers in the Tuberculosis Program in Puncak Jaya District

Methods: Qualitatively conducted in August 2018 at the Puncak Jaya District Health Office, Illu and Mulia Health Centers. Informants as many as 9 informants were obtained by in-depth interviews and analyzed qualitatively.

Results: Lack of human resources in the implementation of Case Detection Rate (CDR) and adequate personnel in hospitals and two health centers (Illu and Mulia Health Center) and are still minimal in finding positive smear drivers who live at home. The training went well and but was not evenly distributed for all existing health workers causing a lack of maximum performance in the Case Detection Rate (CDR). The method refers to the Directly Observed Treatment Short Course (DOTS) strategy. Screening suspected TB was done passively through case finding promotion so that it was considered ineffective. Geographical location is an obstacle for officers in suspicious positive AFB screening due to the location of houses that are far and difficult to reach by land transportation, costs, low awareness of the community and security.

Keyword: Case Detection Rate, health Employee, Tuberculosis

1. INTRODUCTION

Every pulmonary TB patient can transmit TB germs to 5-10 people around him. If the case finding rate is low, then the likely impact of the transmission will be more widespread. As a result of being infected with TB, an adult TB patient will lose an average working time of 3 to 4 months. This results in losing a household's annual income of around 20-30%. If TB sufferers die, they will lose around 15 years of income. In addition to being economically detrimental, TB also has other socially harmful effects to the point of being excluded by the community (RI Ministry of Health, 2014).

Internal barriers that are still experienced by the TB control program include the existing health service facilities not all fully involved in the TB control program. In addition to the workforce problem it was reported that 98% of staff in the Puskesmas and approximately 24% of TB staff in hospitals had been trained, the TB program had to continue to develop human resources given the high level of staff mutation. A new challenge for the TB program is the increasing need for training for new approaches such as drug-resistant
TB, PAL, PPI TB, and others. Basic training on TB is still needed given the expansion of the program and various new innovations to strengthen the implementation of the program, for example the introduction of new diagnostic tools. Other obstacles are low community participation due to poverty, unemployment, education level, low per capita income which results in the vulnerability of the community to TB (Ministry of Health, 2014).

The low discovery of new cases will have an impact on healing pulmonary TB disease and the occurrence of bacterial resistance to several anti-tuberculosis drugs or multi-drug resistance, so that pulmonary TB disease is very difficult to cure and cause high mortality rates (Ariani, 2015). This process will succeed if the fulfillment of infrastructure and the knowledge and attitudes of good officers. According to research conducted by Ratnasari (2015), the factors related to the performance of TB Paru program officers on case detection rates were AFB (+) knowledge of officers, officer training, officer arrest, active suspicious TB screening and officer attitudes and unrelated factors are the level of education, work period and motivation. The research conducted by Aditama (2013) revealed that in the aspect of human resource input there are still multiple tasks so that the implementation of the program has not achieved maximum results, incentives from workload are still not sufficient despite adequate facilities and infrastructure. Besides cross checking, the cure rate is still very low in some Puskesmas because it is still below the target (85%). Constraints faced are lack of funds, personnel who do not attend training and there are still multiple tasks. Further stated by Ratnasari (2015), revealed that the limitations of human resources, multiple tasks, facilities and infrastructure were the reasons for suspicious screening activities. Not a few geographical factors also become obstacles in the selection of suspects by officers.

The work area of the Health Office of Puncak Jaya Regency consists of peat, mountain and dry land areas with an average height of 500-3,900 m above sea level. Transportation between districts uses air transportation, which is the only alternative that connects the capital of the district with the districts in the interior that cannot be reached by land and river transportation. Land transportation conditions are still very limited and quality is still relatively low.

The main communication facilities from the District Capital to the District and between districts are Radio Communication (SSB). While District Mulia as the district capital has been able to use cell phone services.

Health facilities in the Puncak Jaya Regency consist of 1 Daerah Mulia General Hospital and 8 health centers. The case finding of positive smear pulmonary TB patients in 2017 had a high incidence of positive smear pulmonary tuberculosis (CDR TB) cases below the set target, which was 70%. Without case finding and treatment the eradication program for pulmonary tuberculosis will not succeed. The results of observations and preliminary interviews were carried out in 2 Puskesmas officers and 1 clerk in one hospital (3 TB program officers) in Puncak Jaya Regency. It was found that the performance of pulmonary tuberculosis program management officers was not maximal. Another problem related to case finding by health workers at the Puskesmas is the presence of multiple tasks and transfer of employees in the environment in the P2 Puskesmas section. With the condition of concurrent employment in other words must be responsible for other tasks, Puskesmas officers feel that they have a heavy workload and the program officials also say that there are pulmonary tuberculosis sufferers who refuse, officers must visit their homes using their own means of transportation. In addition, the problem of geographical conditions and road conditions and the high cost of fuel make it difficult for
health workers to carry out suspected screening. Based on this, the researchers were interested in conducting a study entitled Case Detection Rate (CDR) by Tuberculosis Program Officers in Puncak Jaya Regency.

2. MATERIALS AND METHODS

2.1. Type and Design of Research

This type of research is qualitative descriptive research. Syaodih (2008) states that descriptive research is the most basic form of research. Aimed at natural or human engineering conditions. According to Syaodih (2008) in Pongtiku, et al (2016) that qualitative research is a study aimed at describing and analyzing phenomena, events, social activities, attitudes, beliefs, perceptions, thoughts of individuals individually and in groups”. This type of research is qualitative with a case study approach, which is a method of research conducted with the aim of describing the problem that occurs to conclude the image objectively (Swarjana, 2013). Focus on research to understand the influence of human resources, training, active TB suspect screening methods, geographical location, costs, facilities and infrastructure, supervision in implementing Case Detection Rate (CDR) by officers in the Tuberculosis Program in Puncak Jaya Regency.

2.2. Place and Time of Research

The place for conducting this research was conducted at the Illu Health Center and the Mulia Health Center working area of the Puncak Jaya District Health Office. This research was conducted in August 2018.

2.3. Population and Samples

The population in this study were all P2 TB officers at Illu Health Center and Mulia Health Center and Puncak Jaya District Health Office. The selection of informants is done by using a snowball sampling technique, namely the selection of sampling based on the involvement of informants who know the problem clearly, can be trusted to be a good source of data and able to express opinions well and correctly (Swarjana, 2013). Informants are sources of information that knows for sure the events or events related to the research variables include human resources, training, active TB suspect screening methods, geographical location, costs, facilities and infrastructure, supervision in implementing Case Detection Rate (CDR) by officers at Tuberculosis Program in Puncak Jaya Regency. The number of informants was 9 informants, namely 1 P2M head of the Puncak Jaya District Health Office, 2 heads of the Puskesmas, 2 P2TB officers in the Puskesmas and 2 P2TB implementation staff at the Puskesmas and 2 laboratory staff at the Puskesmas.

3. RESULTS

3.1 Characteristics of Informants

Based on the research that has been done, it was obtained characteristic officers in the Pulmonary TB program in Puncak Jaya Regency as follows:

<table>
<thead>
<tr>
<th>Informant</th>
<th>Age (year)</th>
<th>Education</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informant 1</td>
<td>38</td>
<td>D-III Nersing</td>
<td>Ka.Sie P2M Dinkes</td>
</tr>
<tr>
<td>Informant 2</td>
<td>40</td>
<td>D-III Nersing</td>
<td>Kapus Illu</td>
</tr>
<tr>
<td>Informant 3</td>
<td>44</td>
<td>S2 Management</td>
<td>Kapus Mulia</td>
</tr>
<tr>
<td>Informant 4</td>
<td>39</td>
<td>D-III Nersing</td>
<td>Pengelola programp TB Puskesmas Illu</td>
</tr>
<tr>
<td>Informant 5</td>
<td>48</td>
<td>D-III Nersing</td>
<td>Pengelola program P2 TB Puskesmas Mulia</td>
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<td>D-III Nersing</td>
<td>Staf program P2 TB Puskesmas III</td>
</tr>
<tr>
<td>Informant 7</td>
<td>39</td>
<td>D-III Nersing</td>
<td>Staf program P2 TB Puskesmas Ill</td>
</tr>
<tr>
<td>Informant 8</td>
<td>47</td>
<td>S1 Analist</td>
<td>Staf LAB PKM Illu</td>
</tr>
<tr>
<td>Informant 9</td>
<td>36</td>
<td>S1 Analist</td>
<td>Staf LAB PKM Mulia</td>
</tr>
</tbody>
</table>

The number of informants was 9 informants, namely 1 P2M head of the Puncak Jaya District Health Office, 2 heads of the Puskesmas, 2 P2TB officers in the Puskesmas and 2 P2TB implementation staff at the Puskesmas and 2 laboratory staff at the Puskesmas.
at the Puskesmas.

3.2 Human resources in implementing Case Detection Rate (CDR)

The workforce in the TB Control Program is aimed at ensuring energy needs for the implementation of TB Program activities in an implementing unit. In this workforce planning, standards are guided by minimum requirements both in the number and type of energy needed. Based on the results of interviews about human resources in the implementation of the Case Detection Rate (CDR) as quoted from the results of the interview as follows:

Carrying out Case Detection Rate (CDR) of TB patients needs good human resources and the maximum amount, however, the number of Human Resources in Puncak Jaya Regency is very minimal Overall in Puncak Jaya there are eight Puskesmas and one hospital, but those who run TB programs in the case of Case Detection Rate (CDR) is only two puskesmas and one hospital, because these three services have sufficient Human Resources, while the other six health centers still lack energy (Informant 1). In general, the personnel at Illu Puskesmas are adequate, there are doctors, responsible people, implementers including laboratory personnel (Informants 2).

Here already has enough personnel to carry out case discoveries, there are doctors, nurses and midwives and laboratory personnel for examination (Informant 3)

The results of interviews about human resources in the implementation of Case Detection Rate (CDR) 1 informant stated that P2TB personnel in the Puncak Jaya district were still very minimal and only two puskesmas had adequate staff in case finding. This was also reinforced by the statement of 2 informants who stated that the staffs at Illu Health Center and Mulia Health Center were adequate because there were doctors, nurses and laboratory analysts. In addition, 4 informants stated that the existing rapture was sufficient in finding cases that were carried out in the Puskesmas and 2 informants stated that there were adequate laboratory personnel in laboratory examination.

3.3 Training in implementing Case Detection Rate (CDR)

Human Resource Development (HR) is a systematic process in meeting sufficient and quality workforce needs, according to needs. This process includes the provision of energy activities, coaching (training, supervision, workshops / on the job training), and sustainability. Each Government and Non-Government UPK must have minimum standards relating to basic needs (number and types of personnel) in implementing TB program activities in an implementing unit. Health workers who have the ability to understand the concepts and implementation of the DOTS strategy are very much needed to achieve successful treatment of TB patients receiving care from the UPK. Training is an effort to improve the knowledge, attitudes and skills of health workers related to improving the quality and performance of officers. The purpose of this activity is the availability of minimum service standards relating to the number and type of health workers at the non-government UPK. Capacity building needed includes knowledge, attitudes and skills in diagnosing and treating TB patients. The expected output of this activity is that each UPK has trained doctors, nurses and laboratory personnel.

Based on the results of interviews about training in human resources in the implementation of the Case Detection Rate (CDR) as quoted from the results of the interview as follows:

We often conduct training together with the Papua provincial health office, if there are activities we usually inform the puskesmas to take part in pulmonary TB training activities (Informant 1). I often attend training, I get a lot of knowledge, but after I can't implement it all because there are many limitations here, starting from logistics, facilities and other supporting infrastructure needed to carry out Case Detection (CDR), so it's better if those
who want to do the training just come here so they can see the limitations here so that they can be proposed later for higher leaders to pay attention (Informant 2).

The officers who had attended the training and training were conducted not here, but in Jayapura, so it was rather difficult for us too if someone came out to take part in the training, especially for other colleagues, especially the laboratory staff, there were only two people (Informant 3) ... TB program implementers in the field to improve skills, we need and must take training so that there is no mall practice when Case Detection (CDR) is conducted, but the reality now is that we are having difficulties because if we go to training, "who will do the suspecting through Case Detection Rate (CDR) ?! "because our officers are limited (Informant 4) ... Training is often done but not here (Informant 5).

The results of interviews about human resource training in the implementation of the Case Detection Rate (CDR) concluded that 1 informant stated that training was often carried out for health workers and all health workers were simulated if there were training. One informant stated that the training that had been followed but could not be applied in the implementation was due to the lack of logistics, facilities and other supporting facilities. 3 informants stated that they had difficulty in attending training because of the lack of officers at the Puskesmas, making it difficult for other health workers in conducting case discovery and 2 informants stating that training should be conducted at the Puskesmas so that all existing health workers could know the implementation of case finding because case finding is difficult to implement because only 1 to 3 health workers know. In addition, 2 informants stated that the laboratory examination for TB examination was well understood through the training carried out.

### 3.4 Methods for implementing Case Detection Rate (CDR)

Improved methods of development and better use of methods for implementing Stop TB recommendations based on DOTS strategies with service standards refer to the International Standard for TB Care (ISTC) which aims at finding cases globally to improve and expand the use of strategies to stop TB transmission by increasing access to accurate diagnosis and effective treatment by accelerating the implementation of DOTS to achieve global targets in TB control and increasing the availability, affordability and quality of anti-TB drugs and developing strategies to deal with various challenges by adapting DOTS to prevention, dealing with TB with OAT resistance ( MDR-TB) and reduce the impact of TB / HIV and accelerate efforts to eliminate TB.

Based on the results of interviews about training in human resources in the implementation of the Case Detection Rate (CDR) as quoted from the results of the interview as follows:

In my opinion a good method is to use the Directly Obsessed Treatment Short Course (DOTS) Strategy, but we in Puncak Jaya haven't all services run the Observed Treatment Short Course (DOTS) strategy with the cost, facilities and infrastructure, human resources and security situation also affecting , then the Observed Treatment Short Course (DOTS) strategy can run in two PSAs and one hospital while the other six health centers have not been implemented, other than that another method is the Regional Action Plan (RAD) for the relevant regional apparatus in an effort to eliminate the 2035 but application haven't started yet (Informant 1).

Our method here is applied if there is a family diagnosed with TB positive, usually we inform the whole family to come to the examination, or inform the signs and symptoms of pulmonary TB if there are families who have these symptoms, we encourage the family to inform, but only patients who come that's just the next for
treatment, so we form a supervisor to take medicine from the family at the same time we ask to monitor if there are families who are sick and tell them to prevent transmission to other families (Informant 2) ... The method here is more passive in the sense of only finding cases in the Puskesmas and diagnosed and reported and for follow-up. Usually we collaborate with cadres, families or PMO to provide information to family members or the community in the surrounding environment if there is someone who is sick like a continuous coughing, especially at night, we ask to report (Informant 3) ... Method in finding cases here only patients who come, if there are members of the community who are sick and diagnosed, we tell the community and family to check if there are similar signs and symptoms. Once we went around or we did mobile health center activities, we collaborated with posyandu and cadres who were there to inform if there were family members who were sick and had the same symptoms to immediately seek treatment at the Puskesmas (Informant 4)

The results of the interview about the method in implementing the Case Detection Rate (CDR) were concluded that 1 informant stated that the method used was the Directly Observed Treatment Short Course (DOTS) strategy and not all services run with the cost, facilities and infrastructure, human resources and security situation. 7 informants stated that the method in case finding carried out so far was the effort of handling patients in the Puskesmas on treatment. While 2 informants said that besides the examination at the Puskesmas, the method used was through the examination in the community health center.

3.5 Active TB suspect screening for Case Detection Rate (CDR)

Screening was suspected, the proportion of patients with positive smear TB was suspected, the proportion of smear positive TB patients among all pulmonary TB patients was recorded / treated, the proportion of pediatric TB patients among all TB patients, case detection rate, number of case notifications, conversion rate, cure rate, treatment success rates and error rates. Analysis was carried out by comparing program coverage and target prevention programs that had been established in the 2008 tuberculosis prevention guidelines. Program indicators included suspect screening rates, the proportion of patients with positive smear TB among suspects, the proportion of patients with positive smear TB among all patients with pulmonary TB recorded / treated, the proportion of pediatric TB patients among all TB patients, case detection rate, number of case identification, conversion rate, cure rate, treatment success rate, and error rate. Descriptive analysis was carried out on each variable aspect of input, process, and output, presented in the form of tables and narratives so as to identify various variables that led to program failure.

Based on the results of interviews about the selection of suspects in the implementation of the Case Detection Rate (CDR) as quoted from the results of the interview as follows:

Screening is suspected to be carried out here by case finding in Puskesmas and mobile health centers, screening are conducted if there are patients who come for treatment and are given information to the family to do the examination (Informant 1). Screening is suspected of the results of examinations carried out at the Puskesmas, we cannot come directly to the house considering security and transportation, so if there are family members who are sick or have signs and symptoms of TB, we recommend treatment and working with the hospital if something goes wrong treatment (Informant 2). TB suspect screening through Case Detection (CDR), is carried out in accordance with the instructions, where friends at the Puskesmas level will make referrals to special hospitals for suspected treatment failures, while new suspects will be directly handled by the management in
the puskesmas (Informant 3) ... Penjaringan is carried out here for examination, if there are consumables or can not be carried out further examination or patients who experience failed drugs we refer to Mulia Hospital (Informant 8) ... Patients who are suspected of being examined and patients who fail treatment we refer to Mulia Hospital for further treatment (Informant 9).

4. DISCUSSION

4.1 Human resources in implementing Case Detection Rate (CDR)

The results of the study were obtained on human resources in the implementation of the Case Detection Rate (CDR) in Puncak Jaya District that P2TB personnel in the Puncak Jaya district were still very minimal and only two Puskesmas had adequate staff in case finding. The number of Puskesmas in Puncak Jaya Regency is 8 units and 2 health centers, including the Illu Health Center and Mulia Health Center, have adequate staff. This was acknowledged by two informants as the Head of Illu Health Center and Mulia Health Center, that human resources were adequate in the Puskesmas because there were doctors, nurses and medical laboratory personnel.

According to Kemeneks RI (2014), human resources in the prevention and case finding of pulmonary TB in microscopic referral health centers and self-administering Puskesmas: the minimum requirement of trained implementing staff consists of 1 doctor, 1 TB nurse / officer and 1 laboratory staff and for type B hospitals the minimum need for trained implementing staff consists of 2 doctors, 2 nurses / TB officers, and 1 laboratory staff. This shows that human resources in Puncak Jaya Regency are adequate for 2 Puskesmas and 1 hospital.

This research is in line with the research conducted by Aditama (2013), in Boyolali Regency in the prevention program for pulmonary tuberculosis it was categorized as good quality because it was in accordance with the pulmonary P2TB manual. This is complemented by a staffing arrangement consisting of general practitioners, paramedics / program managers, and laboratory officers. According to the Indonesian Ministry of Health (2011) in the book National Strategy for TB Control in Indonesia, the objectives to be achieved are managerial and technical capacity in effective TB management and control, reinforced by the quality of TB services in adequate numbers of health facilities. Health workers at every level and health system who must have competencies to support the success of implementation and continuity of the national TB control strategy. The implementation is based on job descriptions and supported by a system that motivates to use their competencies in providing quality preventative and curative services for the entire population based on needs.

The informants said that the lack of health workers in the Case Detection Rate (CDR) in the area of Puncak Jaya District stated that there were sufficient staff at the Puskesmas (Illu Health Center and Mulia Puskesmas), but this was not enough if a patient's visit or examination was conducted or suspected according to instructions. Technical in case finding. To maximize the available health workers, the officers collaborated with Posyandu cadres as monitors and found cases if there were people around them who had symptoms of pulmonary TB. Then it is expected that health cadres can remind and motivate patients who drop out of treatment in their area, or suspect TB screening by cadres or community-based. This needs to get the attention of the Health Office in the provision of health workers in six other health centers in the implementation of the P2TB Case Detection Rate (CDR) in Puskesmas, so that suspect screening can reach the wider community.

4.2 Training in implementing Case Detection Rate (CDR)

The results of the study found that training in human resources in the
implementation of the Case Detection Rate (CDR) was concluded to have been good and often done for health workers. Various responses from health workers who received the training revealed that the training was only given to 1-3 health workers, so that the implementation of case finding was not optimal because other health workers who did not attend the training did not know about it and hoped for on the job training all health workers in the health center can find out the mechanism or application of the determination of suspected cases of patients with pulmonary TB. Pratiwi's research (2012), that there is a relationship between training TB officers with the quality of TB services and TB officers who have participated in DOTS training have a 5.84 times greater chance of finding pulmonary TB patients than those who have not attended DOTS training. According to Notoatmodjo (2011), training is a way to equip someone who has formal education in accordance with their duties, so they can improve the quality of their work in the hope that someone will more easily carry out their duties. Training is also an educational process that aims to improve the abilities or special skills of a person or group of people to improve performance. But when TB officers have not shown better quality, it is possible because of the additional burden of assignments given by their superiors.

Informants' statements about the lack of equal distribution of training for health workers led to the discovery of cases in visiting patients as well as other health workers who lived in the surrounding community. For this reason, there is a need for tiered and continuous DOTS training for all health care providers, evaluation of TB performance, performance-based incentives to motivate TB officers to be more sensitive to patients visiting the Puskesmas with symptoms of pulmonary TB. Good education is necessary for pulmonary TB officers, especially health analyst officers in re-examining sputum microscopically. This was done to see the progress of the treatment results and the ability to fill out TB forms with a large amount to encourage good performance. In addition, uneven training can lead to low case findings if health workers trained in DOTS strategies experience mutations and the limited number of health workers causes the benefits of DOTS training to be less than optimal.

4.3 Methods for implementing Case Detection Rate (CDR)

The results of the study were obtained by the methods carried out by the Illu Health Center and Mulia Health Center in the implementation of the Case Detection Rate (CDR) using the Directly Observed Treatment Short Course (DOTS) strategy while the six other Puskesmas units in the Puncak Jaya district were not implemented due to cost constraints, facilities and infrastructure, human resources and security situation. In addition, there is planning for the use of applications in the Regional Action Plan (RAD) in an effort to reach the Elimination of 2035 but the application has not yet begun or been implemented. Eight informants who worked at the Illu Health Center and Mulia Health Center stated that the method in finding cases that had been carried out so far was an effort to handle patients at the Puskesmas and if there was an on-going Puskesmas implementation.

Case finding figures which are also one of the main indicators for assessing progress or successful control of tuberculosis (RI Ministry of Health, 2011). The method of finding TB patients, namely screening is suspected to be done passively with active promotion (Ministry of Health of the Republic of Indonesia, 2011). This is because TB treatment is quite long, which is 6 months, must be based on awareness of both parties, namely awareness of TB patients for routine treatment and focus of health workers in the implementation of treatment, as well as communication between the two parties that continue to be well maintained during treatment.

The lack of electricity in the Illu Puskesmas and Mulia Puskesmas and other
health centers, so that the method of applying the application cannot be implemented in monitoring the development or suspected data of pulmonary TB patients in making suspicious mapping into their working area, making it easy to make decisions in suspect screening.

4.4 Active TB suspect screening in the case of Case Detection Rate (CDR)

The screening suspected to be carried out in Puncak Jaya Regency was done passively, namely the discovery of suspects in patients who came to the health center. In the selection process, it is carried out through health promotion efforts by providing counseling to families as supervisors for taking medication and monitoring or monitoring other families if there are similar signs and symptoms immediately to bring their families to health services for examination. This research is not in line with the research conducted by Aditama (2013) in Boyolali and Noveyanti (2014) districts in Tanah Kalikedingding Health Center Surabaya in the implementation of P2TB in each Puskesmas to carry out active case finding, the rest passive promotive case finding.

The strategy for finding TB patients based on the Ministry of Health (2014) is to actively and passively, examination of TB patient contacts carried out in families with similar symptoms. In this study active discovery was considered to be not cost effective because it required a lot of money. Case identification is done by examining phlegm if the officers at the Puskesmas have had a laboratory and are able to carry out examination of phlegm preparations for TB patients. Illu and Puskesmas and Puskesmas Mulia have appointed PMOs from family members of TB patients. Every TB patient needs direct supervision in order to take medication regularly until healed and become a supervisor for other families if they have the same symptoms so that an examination is immediately carried out.

It is important that efforts to promote health are more comprehensive and periodic in changing people's behavior by collaborating with local community leaders and traditional tokens, so that people are more motivated in accessing health services in preventing transmission of pulmonary TB disease.

4.5 Geographical location in implementing Case Detection Rate (CDR)

The discovery of pulmonary TB sufferers is the first step in TB control program activities. One of the activities to find TB patients is by suspected TB screening. Screening is suspected to be done with someone with positive smear contact in one house, especially those who show the same symptoms should be examined for phlegm. TB suspect screening activities in the Puncak Jaya District Health Center area are only carried out by two Puskesmas because they are considered not cost effective, therefore screening activities are only carried out if it is needed in areas suspected of contacting TB patients or in areas where there are many TB patients but difficult to access by health services. Screening is supposed to be carried out by the method of finding TB patients with the DOTS strategy done by passive case finding and active case finding by means of active promotion to the community (Ministry of Health, 2014). The results showed that all informants admitted that the low number of cases found in patients with positive smear contact was one of the factors caused by geographical problems, while in logistics distribution at the Puskesmas it was revealed that five health centers could be reached by land and three public health centers that could be reached by air transportation in the provision of logistics and facilities and infrastructure at the health center.

The statement of informants who served in the Puskesmas stated that the distance between houses and expensive transportation costs caused the implementation of cases through home visits, because the location of positive smear houses in one family was far from the climbing area and the distance of the house was a minimum of 1 kilometres travelled by
foot, giving rise to security risks for officers. In addition, 3 informants added expensive transportation due to expensive and difficult fuel oil. The research conducted by Ratnasari (2015) revealed the same thing in Rembang Regency that networking activities were suspected of being influenced by geographical factors. The information obtained is that there are activities to monitor cadres in the field, namely through routine meeting activities between community cadres and program implementers at the City / Regency and Provincial levels. During the meeting, a process of updating information was held as well as solving problems if problems were indeed found. This meeting is held at least at regular monthly reporting and activities carried out at the Regency / City level.

4.6 Costs for implementing Case Detection Rate (CDR)

The results of the study obtained funding sources in the implementation of the P2TB program at the Puskesmas originating from routine APBD funds and special autonomy and from the informant's statement that the costs were sufficient in implementing the program in the Puskesmas with training, medicine, medical devices and consumables in the supporting examiners while the implementation of programs outside the community center is still lacking. This was acknowledged by an informant as the head of P2M District Health Office in Puncak Jaya that the lack of costs was due to air and land transportation that required long walking times which caused high costs in distributing logistics at the Puskesmas. In addition, the statement of the informant was related to the implementation in the Puskesmas that the funds were not enough to reach the community in finding cases or suspect family members for positive smear patients, because of high fuel and accommodation prices and long distances, because not all can be reached by vehicles.

The budget in achieving performance reflects the first few things, the purpose and purpose of requesting funds. Second, the costs of the programs proposed in achieving this goal and the third, quantitative data that can measure achievement and work carried out for each program. Budgeting with this performance approach focuses on the efficiency of organizing an activity. Efficiency itself is a comparison between output and input. An activity is said to be efficient, if the output produced is greater with the same input, or the output produced is the same as fewer inputs. This budget is not only based on what is spent, as is the case with traditional budget systems, but also based on specific goals / plans whose implementation needs to be prepared or supported by an adequate budget and the use of these costs must be efficient and effective (Ministry of Health Republic of Indonesia , 2012). The use of costs in carrying out P2TB activities in Puskesmas uses the funds provided by routine APDB and health operational assistance with the applicable provisions, namely in accordance with the Decree of the Minister of Finance of the Republic of Indonesia. Pulmonary program activities come from the regional income and expenditure budget (APBD) I. The pulmonary program activities are funded by the Puncak Jaya Regency government both to fund supervisors for taking medicines (PMO), procurement of report format books, operational costs and cross check inspection needs. Interviews with program managers and laboratories resulted in the opinion that the funds received were still adequate in implementing the Puskesmas. The low achievement of CDR is a non-technical problem, including reaching in positive suspected BTA in examining home visits.

5. CONCLUSIONS

Based on the results of the discussion it can be concluded that the low case detection rate in Puncak Jaya Regency was concluded as follows:

1. The lack of human resources in the implementation of the Case Detection Rate
(CDR) and adequate personnel in hospitals and two health centers (Illu and Mulia Health Center) and the lack of activities to find positive smear drivers who live at home.

2. Training is carried out outside of Puncak Jaya Regency, so that the training provided is not evenly distributed to all existing health workers causing a lack of maximum performance in the Case Detection Rate (CDR).

3. The method for implementing the Case Detection Rate (CDR) refers to the Directly Observed Treatment Short Course (DOTS) strategy.

4. Screening suspected TB is done passively through case finding promotion so that it is considered ineffective.

5. Geographical location is an obstacle for officers in suspicious positive AFB screening due to the location of houses that are far and difficult to reach by land transportation and security issues.

6. Costs are sufficient in financing P2TB in the Puskesmas during examination and treatment and inadequate costs in screening are suspected in activities outside the Puskesmas building.

REFERENCES

- Eva SA., (2015), Hubungan Karakteristik Individu dengan Penemuan


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The Factors Influencing Four Visited Antenatal Care in Primary Health Centre in Sanggeng Manokari District, West Papua Province

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ABSTRACT

Background: Maternal mortality rates are still high in pregnancy or labor caused by low pregnancy visits including K4 pregnancy trips in preparing labor due to various factors, education, work, knowledge, attitude, husband support, affordability of health facilities and family income.

Objective: To find out the factors that influence K4 in Sanggeng Health primary Center, Manokwari Regency.

Research Method: Analytical with cross sectional study design. The population was all pregnant women in July - September 2018 in the Sanggeng Health Primary Center as many as 606 pregnant women with a total sample of 86 people using purposive sampling. Data obtained using questionnaires and analysis using chi square and logistic binary regression.

Results: Factors that influence pregnancy K4 in Sanggeng Community Health primary Center, Manokwari Regency are education variables (p-value = 0,000; RP = 3,528 95% CI = 1,665-7,479), knowledge (p-value = 0,010; RP = 1,946; CI 95% = 1,188-3,186) attitude (p-value = 0,000; RP = 3,450; CI 95% = 1,206-3,611) , affordability of health facilities (p-value = 0,001; RP = 2,402; 95% CI = 1,386-4,164) and family income (p-value = 0,029; RP = 1,773; 95% CI = 1,082-2,903). Factors that did not influence pregnancy K4 in Sanggeng Community Health primary Center, Manokwari Regency were age (p-value = 0,438; RP = 0,616 CI 95% = 0.233-1,633) and Occupation (p-value = 0,536; RP = 1,231; CI 95% = 0.749-2,022). Educations, affordability of health facilities, attitudes and husbands support are the dominant factors for K4 pregnancy visits.

Keywords: Visited 4, Antenatal care, Pregnant Mother

1. INTRODUCTION

Antenatal Care (ANC) is a pregnancy examination to optimize the physical mental health of pregnant women so that they are able to face childbirth, during puerperium, preparation for giving breast milk and the return of reproductive health naturally in order to reduce maternal mortality. Antenatal care services can detect complications in pregnancy and childbirth (Candra, 2013). Data from the Ministry of Health based on the results of the National Basic Health Research (Riskesdas, 2010) coverage of K1 in 2010 was 95.26% and K4 coverage was 85.56%. The amount is still less than the national target, namely 100% K1 and 95% K4 coverage. Whereas in the National Basic Health Research (Riskesdas, 2013) data, 95.4% of pregnancy examinations (K1) and pregnancy frequency of at least 4 times during pregnancy were 83.5%. The ideal K1 coverage nationally is 81.6% with the lowest coverage in Papua (56.3%) and the highest in Bali (90.3%). National K4 coverage is 70.4%. The difference between ideal K1 coverage and K4 nationally shows that 12% of mothers who receive ideal K1 do not continue ANC according to the minimum standard (K4).

Report of the West Papua Provincial Health Office (2016), in 2014 K1 coverage was 58.1% and K4 was 33.6%, while in 2015 K1 coverage was 56% and K4 was 24%. While the 2015 Manokwari District Health Office Data K1 coverage is 111%
and K4 is 49.4%. In 2016 K1 coverage was 118.3% and K4 was 45.3% and in 2017 K1 coverage was 91% and K4 was 45%. This shows that the target of ANC coverage in 2017 experienced a decline in K1 and K4 which was not reached according to the 95% standard (Manokwari District Health Office, 2017). Based on Local Area Monitoring (PWS) data in Sanggeng Community Health Center, Manokwari Regency in 2015 K1 coverage was 94.3% and K4 was 69.8%, in 2016 K1 coverage was 23.7% and K4 was 14.9%, in 2017 coverage K1 is 77% and K4 is 24%. Local Area Monitoring Data (PWS) declined in all three puskesmas, especially K4, and was the lowest of 23 Puskesmas in Manokwari District. So that is the reason for researchers to conduct research at the Sanggeng Health Center.

The results of Erlina's study (2013) revealed that the factors influencing the low regularity of pregnant women during pregnancy visits were mothers' attitudes, while the results of research by Dewi & Musfiroh (2013) said that the factors influencing the low visit of antenatal care is the lack of knowledge about the benefits of making ANC visits. In addition, Vitriyani's research (2013) revealed that age, education, work and husband's support and family income greatly affected the mother during her pregnancy visit. Increasing antenatal health services is affected by the use of antenatal services. With no use of antenatal care facilities can be caused by many factors such as inability in terms of costs and location of services that are too far away (Prawirohardjo, 2012). In accordance with the above problems, the researcher was interested in conducting a study entitled "Factors that influence K4 visits at Sanggeng Health Center, Manokwari Regency, West Papua Province".

2. MATERIALS AND METHODS

2.1. Types and Design of Research

This research is a quantitative descriptive study with a cross sectional study design. The cross sectional study is an epidemiological study design that studies variables including risk factors and variables - variables which include effects observed at the same time (Notoatmodjo, 2012).

2.2. Time and Location of Research

The study was conducted at the Sanggeng Health Center in Manokwari Regency. The reasons for choosing this Puskesmas as a place of research are:
1. Low coverage and K4 from year to year are getting lower.
2. No research has been conducted on K4 coverage in Sanggeng Health Center, and Manokwari District.

3. RESULTS

3.1. Effect of Age on K4 pregnancy visits

Table 1. Effect of Age on K4 Pregnancy Visits at Sanggeng Health Center, Manokwari Regency in 2018

<table>
<thead>
<tr>
<th>Age</th>
<th>K4 visit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Irregular</td>
<td></td>
</tr>
<tr>
<td>&lt; 20 and &gt;35 year</td>
<td>30</td>
<td>64.2</td>
</tr>
<tr>
<td>20-35 year</td>
<td>70</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1 shows that of 70 respondents aged <20 years and >35 years, there were 3 people (30%) who did not regularly visit K4 lower than mothers aged 20-35 years as many as 37 people (48.7%). The results of the chi square test obtained a value of $p = 0.438 > 0.05$ which means the age of the mother did not influence the K4 pregnancy visit at the Sanggeng Health Center in Manokwari Regency. The prevalence ratio (RP) test results show Rp. 0.616 95% CI 0.233-1.633, meaning age is not a risk factor for K4 visits.

3.2. Effects of Education on K4 pregnancy visits

Table 2. Effect of Education on K4 Pregnancy Visits in Sanggeng Health Center, Manokwari Regency in 2018

<table>
<thead>
<tr>
<th>Education level</th>
<th>K4 visit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Irregular</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>34</td>
<td>64.2</td>
</tr>
<tr>
<td>High</td>
<td>6</td>
<td>18.2</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>46.5</td>
</tr>
</tbody>
</table>

Table 2. Effect of Education on K4 Pregnancy Visits in Sanggeng Health Center, Manokwari Regency in 2018

$p = 0.000; \text{RP} = 3.528 \text{CI 95\%} = 1.665-7.479$
Table 2 shows that of the 20 respondents who were low educated, there were 34 people (64.2%) who were not regularly conducting higher K4 visits than those who were not educated as many as 6 people (18.2%). The results of the chi square test obtained a value of \( p = 0.000 < \alpha = 0.05 \) which means that education influences the K4 pregnancy visit at the Sanggeng Health Center in Manokwari Regency. The prevalence ratio (RP) test results show Rp = 3,528 CI 95% = 1,665-7,479, meaning that the education of low respondents has the opportunity to irregularly conduct K4 visits by 3,528 times higher than the respondents of higher education.

3.3. Effect of Work on K4 pregnancy visits
Table 3 shows that respondents who worked, there were 27 people (50%) who did not regularly make K4 visits and 13 pregnant women (40.6%) who did not work regularly made K4 visits. The results of the chi square test obtained a value of \( p = 0.650 \) which means that work risked being irregular to conduct K4 visits but because the lower opportunity to irregularly conduct K4 visits by 3,450 times greater than respondents who work regularly. The results of the chi square test obtained a value of \( p = 0.007; RP= 2,087; CI 95\% = 1,206-3,186 \).

3.4. Effect of Knowledge on K4 pregnancy visits
Table 4 shows that less knowledgeable mothers, there were 26 people (61.9%) who did not regularly conduct higher K4 visits than well-informed mothers who regularly conducted K4 visits of 14 people (31.8%). The results of the chi square test obtained a value of \( p = 0.010 < \alpha = 0.05 \), which means that knowledge affects the K4 pregnancy visit at the Sanggeng Health Center in Manokwari Regency. The prevalence ratio (RP) test results show Rp = 1,946; 95% CI = 1,188-3,186, meaning that respondents with irregularly poor knowledge of K4 visits were 1,946 times higher than respondents with good knowledge.

3.5. Effects of Attitudes on K4 pregnancy visits
Table 5 shows that respondents with less attitudes, there are 30 people (75%) who do not regularly conduct higher K4 visits than those who behave as well as 10 people (21.7%) who do not regularly make K4 visits. The results of the chi square test obtained a value of \( p = 0.000; RP= 3,450; CI 95\% =1,938-6,142 \).
Table 6 shows that from respondents who lack husband support, there are 29 people (60.4%) who do not regularly make K4 visits higher than husband's support which as many as 11 people (28.9%) who do not regularly make K4 visits. The results of the chi square test obtained a value of $p = 0.003 < \alpha = 0.05$, which means that husband's support affected the K4 pregnancy visit at the Sanggeng Health Center in Manokwari Regency. The prevalence ratio (RP) test results show Rp = 2.087; 95% CI = 1.206-3.611, meaning that respondents who did not get husband's support had the opportunity to do K4 visits irregularly by 2.087 times greater than respondents who had good husband support.

### 3.7 Effect of Affordability of Health Facilities on K4 pregnancy visits

Table 7. Effect of affordability of health facilities on K4 pregnancy visits at Sanggeng Health Center, Manokwari Regency in 2018

<table>
<thead>
<tr>
<th>Affordability of health facilities</th>
<th>K4 visit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Irregular</td>
<td>Regular</td>
</tr>
<tr>
<td>Difficult</td>
<td>29</td>
<td>64.4</td>
</tr>
<tr>
<td>Easy</td>
<td>11</td>
<td>26.3</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>46.5</td>
</tr>
</tbody>
</table>

*p-value = 0.001; RP= 2.402; CI 95%= 1,386-4,164

Table 7 shows that respondents with affordability of health facilities were difficult, there were 29 people (64.4%) who were not regularly conducting K4 visits higher than the affordability of easy health facilities as many as 11 people (26.3%) who did not regularly visit K4. The results of the chi square test obtained a value of $p = 0.001 < \alpha = 0.05$ which means that the affordability of health facilities affected the K4 pregnancy visit at the Sanggeng Health Center in Manokwari Regency. The prevalence ratio (RP) test results show Rp = 2.402; 95% CI = 1,386-4,164, meaning that respondents with affordability of health facilities that are difficult to irregularly conduct K4 visits are 2,402 times greater than respondents who are easy to reach health facilities.

4. DISCUSSION

#### 4.1. Effect of Age on K4 pregnancy visits

The results of the study obtained the age of pregnant women in the safe category in pregnancy or age 20-35 years (88.4%) compared to mothers aged unsafe pregnancies <20 years or >35 years of age (11.6%). Pregnant women aged 20-35 years had a higher percentage of antenatal visits, namely (48.7%) compared to pregnant women <20 or >35 years of age who were only (30%) in conducting antenatal visits.

This result is in line with the concept according to Rohmah (2010), namely the readiness of pregnant women to participate in meaningful antenatal care with changes that occur due to the process of growth and development (increasing age) and interaction with background experiences. A certain age range is good for carrying out parenting roles and following antenatal care, if too young or too old may not be able to carry out this role optimally. This is a match between the theory and the results of the analysis, namely the number of age groups of pregnant women between 20-35 years who make full use of antenatal visits compared to the age group of <20 or >35 years pregnant.

This result is not in line with the aspect of antenatal service needs where the fulfilment should be prioritized for the age group <20 or >35 years, given the higher vulnerability of pregnancy and the potential for pregnancy complications compared to the age group 20-35 years. At the age of under 20 years, the uterus and pelvis often do not grow to reach an adult size. As a result, pregnant women at that age may experience long labor / traffic jams, or other disorders because of the unpreparedness of the mother to accept her duties and responsibilities as a parent. Meanwhile, at the age of 35 years, maternal health has declined. As a result, pregnant women at that age are more likely to have children with disabilities, prolonged labor and bleeding (Ministry of Health Republic of Indonesia, 2012).
The statistical test results obtained p value = 0.438, it can be concluded that there is no significant distribution between age and K4 visit in pregnant women. This can be explained, that the age factor of the mother does not have much influence on her habits in checking her pregnancy, meaning that both mothers who are at risk and those who are not at risk have the same opportunity to have their pregnancy checked.

The results of this study are the same as those of Fariji (2012) who showed that there was no distribution between ages with antenatal visits. The same results were also obtained from the Pringgawati (2011) study which showed no distribution between ages with antenatal visits. However, the results of this study are different from the Ningsih (2008) study which showed a significant distribution between ages with complete antenatal visits, namely for mothers aged 20

4.2 Effects of Education on K4 pregnancy visits

Education means education that is given by someone to other people in order to understand something. It cannot be denied that the higher a person's education, the easier it is for them to receive information and in the end the more knowledge they have. Conversely, if someone has a low level of education, it will hinder the development of the attitude of the person towards the acceptance of information and newly introduced values (Mubarak, 2011). The results of this study note that maternal education is an influential variable with pregnancy check-up K4 (p = 0.000), where respondents who do not regularly make K4 visits to respondents with low education (64.2%) are higher than higher education (18.2 %). The prevalence ratio (RP) test results that low respondent education has an opportunity to do K4 visits irregularly are 3,425 times greater than higher education respondents.

This can be explained, the role of education on K4 pregnancy visits is very large in terms of reproductive health, highly educated mothers tend to have a better mindset for health improvement while low-educated mothers have less knowledge about their health and are more resigned, giving up on circumstances without any encouragement to improve their destiny. In addition, mothers who are highly educated will always determine their decisions more rationally in this case the pregnancy examination behavior. The same results are explained by Langefielt in Walgito (2014), the higher the level of education, the more people's perspective on all people's lives. The more mature a person is, his attitude towards something he considers useful will be more rational.

The results of the Pangemanan study (2013) show that there is a relationship between education and the utilization of K4 services (p = 0.000; RP = 0.038) where the higher the mother's education the more capable of making decisions and maintaining health and using health facilities around them. Further confirmed by Puspita's research (2014) found that education is related to knowledge about antenatal care, namely the higher the education, there is a tendency for more frequent opportunities for a complete ANC examination.

4.3 Effects of Work on K4 pregnancy visits

The results showed that most pregnant women worked (62.8%). The results of bivariate analysis of respondents who did not regularly visit K4 on respondents who worked (48.1%) were higher than respondents who did not work (40.6%). Statically, there was no significant effect on K4 pregnancy visits (p = 0.536), but respondents who did not work irregularly had K4 visits at 1,231 times greater than respondents who worked. The results of the study are in accordance with Nurlaelah's research (2013), that the employment status of mothers will greatly affect the utilization of health facilities and facilities. This is explained, because working mothers will be preoccupied with their daily activities to work and be interrupted by their work to make a
pregnancy visit. Physical conditions, especially pregnancy and the health of the fetus will always be detected if there are abnormalities or complications of pregnancy.

This result is in line with the concept according to Romauli (2011), namely someone's work will describe the activities and levels of economic well-being obtained. Working mothers have a better level of knowledge than mothers who do not work, because working mothers will have more opportunities to interact with others, so they have more opportunities to get information about the state of their pregnancy.

4.4 Effects of Knowledge on K4 pregnancy visits

Knowledge has a role as an initial motivation for someone to behave. However, changes in knowledge cannot always cause behavioral changes. Green (2005) in Notoatmodjo (2011), states that knowledge is one of the predisposing factors towards the formation of a person's behavior. The results of the study prove that there is a significant relationship between knowledge with pregnancy examination K4 (p = 0.010), where respondents who do not regularly make K4 visits to respondents with less knowledge (61.9%) higher than respondents who have good knowledge (31.8%). The racoprevalence test results, that respondents with less knowledge are not likely to do K4 visits at 1.946 times greater than respondents with good knowledge.

Knowledge is an important domain for the formation of one's actions. According to the experience and results of Rogers' research in Notoatmodjo (2011), that behavior based on knowledge will be long lasting rather than behavior that is not based on knowledge. In addition, knowledge is also the initial stage in adopting new behavior before the formation of attitudes towards the new object it faces. According to Prayoto (2014), knowledge or cognitive is a very important domain for the formation of one's actions. According to Maryam (2014) one's knowledge is gained from the experience of various information conveyed by teachers, parents, friends, mass media, electronic media, user manuals and health workers. In addition, there are other factors, namely: experience, influence of parents, friends, mass media and health workers.

4.5 Effect of Attitudes on K4 pregnancy visits

Attitude is a person's feelings, thoughts, and tendencies that are more or less permanent regarding certain aspects of the environment. Attitude is an evaluative bias towards a stimulus or object that has an impact on how someone is dealing with the object (Mubarak, 2011). The results of the study were obtained from 86 respondents as much as 46.5% of respondents were less and good attitudes as much as 53.5%. This shows the same attitude proportions by pregnant women. Respondents who did not regularly make K4 visits to respondents with less attitudes (75%) were higher than respondents who had a good attitude (21.7%).

The bivariate test results obtained there was an effect of attitudes toward K4 pregnancy visits (p = 0.000), i.e. mothers who had less attitudes of 3,450 times did not make regular visits K4. The results of this study are in line with the research of Candra (2013) in which shows that there is a relationship between maternal attitudes and the regularity of antenatal visits. The attitude of the mother is a view or response that is good or lacking or unclear to the benefits of antenatal care and to her own pregnancy. According to the theory of Ajzen (1991) in Azwar (2013) attitudes are good or less trust to display a certain behavior. These beliefs or beliefs are called behavioral beliefs. An individual will intend to display a certain behavior when he judges it well. An individual will intend to display a certain behavior if he perceives that other important people think that he should do it. For example, the participation of pregnant women in antenatal examinations is influenced by a good attitude towards it. Furthermore, this good character will affect the intention to participate in activities.
related to antenatal examinations.

4.6 Effect of Husband Support on K4 pregnancy visits

Husband's support is encouragement / motivation given by the husband to his pregnant wife in this case the support can be in the form of verbal and non-verbal, advice, tangible assistance in the form of behavior or presence that can provide emotional benefits and influence the behavior of his wife this is support for ANC visits (Mulyanti, 2012). Green and Kreuter (2005), states that family support is one of the reinforcing elements for the occurrence of one's behavior. The results of this study prove that there is a significant influence between husband's support for K4 prenatal care (p = 0.007). Respondents who did not regularly conduct K4 visits to respondents with less husband support (60.4%) were higher than respondents who received good support by their husbands (28.9%). The prevalence ratio test results obtained that respondents who did not get husbands' support had the opportunity to do K4 visits irregularly by 2.087 times greater than respondents who had good husband support.

This result is in line with Pramitasari's (2012) study, stating that mothers who received family support in this case husbands had the opportunity to conduct K4 antenatal visits by (60.4%) compared to mothers who did not receive support (26.3%) and there is a relationship between family and husband support in encouraging mothers to use ANC services. The results of Mulyanti's (2012) study, that ANC visits were lacking due to lack of husband's support to pregnant women including emotional husband support such as husbands not participating in midwives’ / doctors’ rooms and husbands not encouraging when pregnant women received advice from midwives / doctor. In terms of support awards, husbands do not give praise to pregnant women if they are diligent in checking their pregnancies. In terms of instrumental support, the husband does not provide material support (money) and in terms of information support: the husband does not tell that the health condition of the fetus can be identified by checking the pregnancy and the husband does not want to know the benefits of pregnancy examinations for the health of pregnant women and fetuses by seeking information. This lack of support occurs because the family socio-economic level is minimal.

Husband support plays an important role in the behavior of mothers to carry out antenatal care. This is due to concerns from the family about the pregnancy period which is the gate to face labor, the better the pregnancy examination, the family will be more calm to face childbirth. Because it can know the condition of her pregnancy and the health of her mother and baby.

4.7 Effect of Affordability of Health Facilities on K4 pregnancy visits

Affordability or access is a health service that must be achieved by the community, not hindered by geographical, social, economic, organizational and language conditions (Pohan, 2012). Affordability or access to pregnant women in obtaining antenatal services in this study includes geographical access. Geographical access is measured by distance, travel time, travel costs, types of transportation to obtain health services and economic access. Economic access is related to the ability to pay health care costs.

The results of the study found that respondents (64.4%) found it difficult to reach health facilities. This affordability can also be influenced by the availability of the economy in providing transportation. In addition, the geographical condition of the work area in Sanggeng Community Health Center, Manokwari Regency, which is still lacking in public transportation, so that it takes a long time to reach health service facilities plus the high cost of transportation costs. For pregnant women, long time and distance are very risky, as well as the lack of transportation costs, making it difficult for pregnant women to make regular visits.
5. CONCLUSIONS
From the results of research data analysis conducted, conclusions were finally drawn as follows:
1. Age does not affect the K4 pregnancy visit in Sanggeng Health Center, Manokwari Regency (p-value = 0.438; RP = 0.616 95% CI 0.233-1.633).
2. Education has an effect on K4 pregnancy visits at Sanggeng Community Health Center, Manokwari Regency (p-value = 0.000; RP = 3.528 95% CI = 1.665-7,479).
3. Work does not affect the K4 pregnancy visit at Sanggeng Community Health Center, Manokwari Regency (p-value = 0.536; RP = 1.231; 95% CI = 0.749-2,022), but is a factor in the absence of K4 visits.
4. Knowledge affects the K4 pregnancy visit at Sanggeng Health Center, Manokwari Regency (p-value = 0.010; RP = 1.946; 95% CI = 1.188-3.186).
5. The attitude influences the K4 pregnancy visit in Sanggeng Health Center, Manokwari Regency (p-value = 0.007; RP = 2.087; 95% CI = 1.206-3,611).
6. Husband's support influences the K4 pregnancy visit at Sanggeng Health Center, Manokwari Regency (p-value = 0.001; RP = 2.402; 95% CI = 1.386-4.164).
7. Affordability of health facilities has an effect on K4 pregnancy visits in Sanggeng Health Center, Manokwari Regency (p-value = 0.000; RP = 3.528 95% CI = 1.665-7,479).

REFERENCES


The Factors Affecting to the Performance of Midwifery in Antenatal Care Services of Mother and Children's Health Program in Ransiki Health Primary Manokwari Selatan District and Bintuni Borderline

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ABSTRACT

Background: The performance of midwives in antenatal care services is carried out in accordance with the service standards in the MCH program set and various factors that influence the performance of midwives are age, employee status, years of service, knowledge, attitudes, motivation, manager skills (coordinating midwives) and facilities.

Objective: To find out the factors related to the performance of midwives in the KIA antenatal care program at Ransiki Health Center, South Manokwari Regency, West Papua Province.

Research Method: Analytical with cross sectional study design. The population was all midwives in Ransiki Health Center and a sample of 46 people (total poulias. Data were obtained using questionnaires and analyzed using chi square test and logistic binary regression.

Results: Factors related to the performance of midwives in ANC services for MCH programs at Ransiki Public Health Center were age (p-value 0.002; RP = 2.697; CI95% = 1.262 - 5.763), employee status (p-value 0.001; RP = 7.333; CI95 % = 2,821; CI95% 1,416 - 5,619), working period (p-value 0,000; RP = 3,864; CI95% (1,782 - 8,377), attitudes (p-value 0,016; RP = 1,895; CI95% (1,191 - 3,015), motivation (p-value 0,000; RP = 2,750; CI95% (1,464 - 5,164), facilities (p-value 0,015; RP = 1,833; CI95% 1,258 - 2,673) and reward (p-value 0,008; RP = 2,009; CI95% (1,237 – 3,264), While factors not related to the performance of midwives in KIA ANC program services in Ransiki Public Health Center is knowledge (p-value 0.717; RP = 1,200; CI95% (0,735 - 1,960) and manager skills (p-value 1.000; Rp = 1,083; CI95% (0,667 - 1,757), Dominant factors related to performance midwives in ANC services in the mother and child program is motivation (p value= 0,001; OR = 16,713; CI= 95%= 3,254- 85,846) and facility (p value= 0,034; OR = 13,153; CI= 95%= 1,217-142,213).

Keywords: Performance, Midwifery, ANC services, Health Mother and child program

1. INTRODUCTION

Health Centre (Puskesmas) is a functional organization that organizes health efforts that are comprehensive, integrated, equitable, acceptable and affordable for the community, with funding from the government and the community. In implementing Puskesmas management, it includes planning, organizing, monitoring and evaluating (Azwar, 2013). The performance of health workers is a very important element in efforts to maintain and improve national health development. The study of performance provides clarity that internal and external factors are very supportive for individuals in achieving work performance (Mardiyah, et al. 2013). Technical assistance for midwives for village midwives has not been carried out accordingly with the needs and difficulties of communication (Ministry of Health in Jannah, 2016). Midwives are one of the health workers who have important and strategic positions, especially in reducing maternal mortality, figures infant pain and death. Midwives also provide continuous midwifery services and paripuma, which focus on prevention aspects, promotion based on partnerships and community
empowerment together with other health workers to always ready to serve anyone who needs it whenever and wherever he is located (RI Ministry of Health, 2012).

Minimum service standard data in the South Manokwari District Health Office in 2017 for the achievement of K1 pregnancy visits was 71.45% and K4 were 29.62% obstetric complications treated 69.9%. Pregnant women who received TT immunization was 19.5%, 50.93% Fe tables and obstetric complications that were treated had increased by 20.15% (Manokwari District Health Office, 2017).

Based on the Local Area Monitoring Report (PWS) Ransiki Health Center was ranked as the fifth lowest in ANC visits in 2016 K1 visits reached 72% and ANC visits 57.3% and in 2017 K1 visits reached 88.9% and visits ANC K4 11.1% (Ransiki Health Center, 2017). This data shows that K4 visits are lower than K1. The performance of a good midwife can maintain a K1 visit so that pregnant women can have a visit until the fourth visit (K4), so that it can improve maternal health and prevent complications in labor. Based on the description of the above problems, the researcher was interested in conducting a study of "Factors related to the performance of midwives in the MCH antenatal care service at Ransiki Health Center in South Manokwari Regency".

2. MATERIALS AND METHODS

2.1 Types of Research
This study was an observational analytic study with a cross sectional study design. The cross sectional study is a study design that studies variables including risk factors and variables including effects observed at the same time (Sugiyono, 2013).

2.2 Time and Location of Research
This research was conducted at Ransiki Health Center in October 2018 by collecting secondary and primary data.

2.3 Population and Samples
1. Population
Population is the whole object of research or object studied by Sugiyono (2013). The population in this study were 46 midwives at Ransiki Health Center.

2. Samples
The sample is a portion of the population that is considered representative of the population, but if the population is less than 100, then the population is taken as a whole into a sample (Arikunto, 2010). The sampling technique used a saturated sampling technique, so the sample size in this study was a total population of 46 people.

Table 1. Age Relationship with Midwife Performance in ANC services

<table>
<thead>
<tr>
<th>No</th>
<th>Age</th>
<th>Midwife Performance in ANC services</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>&lt; 30 year</td>
<td>23</td>
<td>6</td>
<td>79.3</td>
</tr>
<tr>
<td>2</td>
<td>&gt; 30 year</td>
<td>5</td>
<td>12</td>
<td>70.6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>28</td>
<td>18</td>
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</tbody>
</table>

*p-value = 0.002; RP = 2.697; CI95% (1.262 - 5.763)

Table 1 shows that of 29 people aged <30 years as many as 23 people (79.3%) performance was lacking in ANC services and good as many as 6 people (20.7%). Whereas from 17 people aged >30 years as many as 5 people (29.4) performed less in ANC and good services as many as 12 people (70.6%). The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0.002 or p <α (0.05). This means that there is a relationship between age and midwife performance in ANC services in South Manokwari District. When viewed from the value of RP = 2.697; CI95% (1.262 - 5.763) interpreted that midwives aged <30 years tended to have less performance in ANC services 2,697 times more than midwives aged >30 years.

b. Relationship between Employee Status and Performance of midwives in ANC services
Table 2. Relationship between Employee Status and Performance of midwives in ANC services at Ransiki Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Staff status</th>
<th>Midwife Performance in ANC services</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Non Permanent</td>
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<td>Total</td>
<td></td>
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<td>12</td>
<td>57</td>
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</tbody>
</table>

p-value = 0.001; RP = 2,821; CI95% (1,416 – 5,619)

Table 2 shows that of the 26 people with irregular employee status (PTT) as many as 22 people (84.6%) performance was lacking in ANC services and good as many as 4 people (15.4%). Whereas from 20 permanent employees 6 people (30%) performed less in ANC and good services as many as 14 people (70%). The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0.001 or p < α (0.05). This means that there is a relationship between employee status and the performance of midwives in ANC services in South Manokwari District. When viewed from the value of RP = 2,821; CI95% (1,416 - 5,619) interpreted that the work period of <5 years midwives tended to have less performance in ANC services 2,821 times higher than midwives with permanent employee status.

c. Relationship between Work Period and Performance of midwives in ANC services

Table 3. Relationship between Work Period and Performance of midwives in ANC services at Ransiki Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Work period</th>
<th>Midwife Performance in ANC services</th>
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<td>n</td>
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<td>&lt; 5 year</td>
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<td>12</td>
<td>60</td>
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</tbody>
</table>

p-value = 0.000; RP = 3,864; CI95% (1,782 - 8,377)

Table 3 shows that out of 25 people with a working period of <5 years as many as 23 people (92%) performance is lacking in ANC and services good as many as 2 people (8%). While from 21 people working period >5 years as many as 5 people (23.8%) performance is lacking in ANC and good services as many as 16 people (76.2%). The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0.000 or p < α (0.05). This means that there is a relationship between tenure and the performance of midwives in ANC services in South Manokwari District. Value of RP = 3,864; CI95% (1,782 - 8,377) was interpreted that the work period of <5 years midwives tended to have less performance in ANC services 3,864 times compared to midwives whose working period was> 5 years.

d. Relationship between Knowledge and Performance of midwives in ANC services

Table 4. Relationship between Knowledge and Performance of midwives in ANC services at Ransiki Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Knowledge</th>
<th>Midwife Performance in ANC services</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
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<td>Good</td>
<td>n</td>
</tr>
<tr>
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<td>Less</td>
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<td>2</td>
<td>Good</td>
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<td>Total</td>
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<td>77</td>
<td>36</td>
<td>113</td>
</tr>
</tbody>
</table>

p-value = 0.717; RP = 1,200; CI95% (0.773 – 1,960)

Table 4. shows that out of 10 people with less knowledge 7 people (70%) perform less in ANC services and good as many as 3 people (30%). Whereas from 36 people with good knowledge as many as 21 people (58.3%) performance was lacking in ANC and good services as many as 15 people (41.7%). The results of the chi square statistical test on the significance value of 95% (α = 0.05) obtained p-value 0.717 or p> α (0.05). This means that there is no relationship between knowledge and performance of midwives in ANC services in South Manokwari District. When viewed from the value of RP = 1,200; CI95% (0.735 - 1,960) which was interpreted as meaningless.

e. Relationship between Attitudes and Performance of midwives in ANC services

Table 5. Relationship between Attitudes and Performance of midwives in ANC services at Ransiki Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Attitude</th>
<th>Midwife Performance in ANC services</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less</td>
<td>Good</td>
<td>n</td>
</tr>
<tr>
<td>1</td>
<td>Less</td>
<td>16</td>
<td>12</td>
<td>28</td>
</tr>
<tr>
<td>2</td>
<td>Good</td>
<td>84.2</td>
<td>44.4</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>42</td>
<td>21</td>
<td>63</td>
</tr>
</tbody>
</table>

p-value = 0.016; RP = 1,895; CI95% (1,191 – 3,013)
Table 5 shows that out of 19 people with less attitudes 16 people (84.2%) had less performance in ANC services and good as many as 3 people (15.8%). While from 27 people with good attitude as many as 12 people (44.4%) performance was less in ANC and good services as many as 15 people (55.6%). The results of the chi square statistical test on the significance value of 95% ($\alpha = 0.05$) obtained p-value 0.016 or $p < \alpha (0.05)$. This means that there is a relationship between attitude and performance of midwives in ANC services in South Manokwari District. Value of RP = 1,895; CI95% (1,191 - 3,015) interpreted that the attitude of midwives who were less likely to perform less in ANC services was 1,895 times compared to the attitude of a good midwife.

**f. Relationship between Motivation and Performance of midwives in ANC services**

Table 6 shows that of the 24 people with low motivation as many as 21 people (87.5%) performance is lacking in ANC services and good as many as 3 people (12.5%). While from 22 people with high motivation as many as 7 people (31.8%) performance was lacking in ANC and good services as many as 15 people (68.2%). The results of the chi square statistical test on the significance value of 95% ($\alpha = 0.05$) obtained p-value 0.000 or $p < \alpha (0.05)$. This means that there is a correlation between motivation and performance of midwives in ANC services. Value of RP = 2,750; CI95% (1,464 - 5,164) interpreted that the motivation of low midwives tended to have less performance in ANC services of 2,750 times compared to midwives who had high work motivation.

**4. DISCUSSION**

**a. Age Relationships with Performance of midwives in ANC services**

The results showed that there was a relationship between age and midwife performance in ANC services at Ransiki Health Center (p-value 0.002). The results of the prevalence ratio of RP = 2,697; CI95% (1,262 - 5,763) interpreted that midwives aged <30 years tended to have less performance in ANC services 2,697 times greater than midwives aged> 30 years. The results of this study are in line with the research of Widyawati (2017) in the Deleng Pokhisen Health Center and the Southeast Aceh District Mamas Health Center revealing that age has a significant relationship with the performance of midwives.

This is in accordance with the research conducted by Dewi (2014) which shows that based on age, all respondents were included in the age of> 30 years. The age of respondents who are classified as old gives an illustration that respondents have sufficient experience. Respondents' experiences shape behavior that will become a habit. The results of this study are consistent with the opinion of Azwar (2013) that age has a relationship with one's physical and psychological strength. At certain ages a person will experience changes in work performance. Young age is easier to be subjected to persuasion or it is easier to be given input on something new with an approach. This means that someone with a younger age is more approachable and more easily given input new things compared to someone with old age.

**b. Relationship between Employee Status and Performance of midwives in ANC services**

The results showed that there was a relationship between employee status and the performance of midwives in ANC services at Ransiki Health Center (p-value 0.001). The results of this study are in line...
with the research conducted by Adiputri (2014), that there is a relationship between employee status and performance of midwives in ANC services. This is related to the compensation given. The prevalence ratio test results are interpreted that the status of non-permanent employees tends to have less performance in ANC services 2,821 times greater than midwives with permanent employees.

The lack of performance of midwives in ANC services is due to employees who are permanent employees or state civil servants who have a fixed salary with incentives given according to performance. Meanwhile, non-permanent employees giving compensation depend on the Puskesmas policy. The existence of differences in the delivery of these incentives causes dissatisfaction of midwives who relate their performance. Financial compensation is included in the enabling factors that support or relate to the appearance of performance. Midwives who are non-PTT employees who do not receive appropriate financial compensation will encourage dissatisfaction in themselves so that doing the work will be less good and vice versa. Another study was supported by Wawan (2007), from the results of the multivariate test the most related factors were reward and ability to the performance of midwives in childbirth assistance. The research by Yulianti (2014) also explained that financial compensation with the performance of the village health polyclinic had a significant relationship in service.

This will lead to village midwives not to improve their performance as village midwives, because the results received are the same and there is no difference from other village midwives. This problem needs to be addressed again, that the compensation received by midwives in this case the services received needs to be adjusted to the level of performance that has been done, so that this will spur midwives to further improve their performance in carrying out their basic tasks and functions as midwives.

c. Relationship of Work Period with midwife's performance in ANC services

The results showed that there was a relationship between tenure and the performance of midwives in ANC services at Ransiki Community Health Center, South Manokwari Regency (p-value 0.000). The prevalence ratio test results are interpreted that the working period of <5 years tends to have less performance in ANC services 3.864 times greater than midwives with >5 years of work. The results of the study are in line with the research conducted by Mardiah (2013), that the tenure has a relationship with the performance of midwives.

Work period is the period of time a person has worked in an office, agency and so on. A person's work period (length of work) needs to be known because it can be one indicator of the tendency of workers. For example, it is associated with work productivity, the longer a person works, the higher his productivity will be, because he will be more experienced in completing the tasks entrusted to him (Siagian, 2012).

The actual working period can determine whether a midwife is right to carry out a job as a midwife. The longer the work period of a midwife, it is hoped that she will be more in control of the conditions in her working area. However, the working period is also related to the responsibilities in implementing the ANC, so that the tenure is not too related in the implementation of KIA management (Dewi, 2014).

The relationship of tenure to the performance of midwives is due to the long working period increasing the experience, so that it can improve the performance of midwives. This is in accordance with the opinion of Karawati (2011), that work periods are expressed as work experience, more than 10 years of service are considered Seniority (Karwati, 2011).

d. Knowledge Relations with the performance of midwives in ANC services

The results showed that there was no relationship between tenure and performance of midwives in ANC services
at Ransiki Health Center (p-value 0.762). The results of the study are not in line with the research conducted by Mardiah, L (2013) that there is a relationship between knowledge and midwife performance in the scope of K4 with a significance level of P. Value 0.01. That the knowledge of midwives is related to the performance of midwives in K4 visits because if midwives have good knowledge, midwives are able to provide good services to patients so that patients are satisfied with the services provided by midwives and patients willing to conduct repeat visits thus motivating midwives to improve its performance.

In general, most midwives in the Ransiki Puskesmas have good knowledge (78.3%) knowing about the goals of antenatal care and the schedule of pregnancy visits, while insufficient knowledge is that the examination needed in ANC standards includes anamnese examination to find out if a pregnant woman needs further examination or laboratory tests such as pre-eclampsia or HIV testing. This can have an impact on not thorough examination, especially laboratory tests that are needed in pregnant women in preventing or finding any complications or complications in pregnancy.

The results of the analysis showed that respondents with less knowledge as much as 70% of performance were lacking in ANC services, while respondents with good knowledge as much as 58.3% performance lacked test results in the prevalence ratio of RP = 1,200; CI95% (0.735 - 1.960) which is interpreted as not meaningful or is a protective factor due to the presence of variables that are more strongly related to work performance that affect knowledge in ANC services in the MCH program at Ransiki Health Center.

According to Notoatmodjo (2011), that knowledge possessed by someone is the initial trigger of behavior, including behavior in work. Knowledge is very necessary in order to change mindset and behavior. A good knowledge of a job will make someone master the field of work.

e. Relationship between attitude and performance of midwives in ANC services

The results showed that there was a relationship between attitude and performance of midwives in ANC services at Ransiki Health Center (p-value 0.016). The results of the study are in line with the research conducted by Nur, F (2013) there is a relationship between attitudes and the role of midwives in achieving coverage of ANC services. Midwives who have had good attitudes will tend to play a good role in achieving ANC services 1 time compared to midwives who have less attitudes.

Attitude is the readiness of a person to act (G. Alport 1935 in Prayoto, 2014). In addition, attitude is a mental and nerve state of readiness, which is regulated through experience that provides a dynamic relationship or directed towards the individual response to all objects and situations associated with it. Attitude is a reaction or response of someone who is still closed to a stimulus or object (Prayoto, 2014).

The low performance of midwives was found in the attitudes of midwives who were less than 84.2% in ANC services, while the respondents with good attitude were 44.4%. The prevalence ratio test results obtained value of RP = 1,895; CI95% (1,191 - 3,015) interpreted that attitudes that are less likely to perform in ANC services are less 1,895 times greater than good attitudes.

The best attitude of midwives is an attitude that does not come out of the path of ethical codes and health disciplines. In addition, the attitude of midwives must be accompanied by an attitude of patience, firmness, fast acting, accommodating and so on. The attitude of the health personnel is of course accompanied by the color of his personality which is characterized by the personality of the health worker characterized by character / character, both the temperament which is already homeostatin. The attitude of midwives must begin
with motivation and perceptions based on profession (Walyani, 2015)

The relationship between the attitude of midwives in ANC services needs attention from Puskesmas management by paying attention to the satisfaction of midwives at work, because the attitude of midwives is less formed by dissatisfaction with the performance performed.

f. Relationship between Motivation and Performance of midwives in ANC services

The results showed that there was a relationship between motivation and midwives' performance in ANC services at Ransiki Health Center (p-value 0.000). The results of this study are in line with the research conducted by Mardiah (2013) that there is a correlation between motivation in K4 visits and the performance of midwives in examining pregnant women. The results of the analysis showed that respondents with low motivation as much as 87.5% had less performance in ANC services and on respondents who had high motivation as much as 31.8% less performance in ANC services. The results of the prevalence ratio test interpreted that the low motivation of midwives tended to perform in ANC services less than 2.750 times greater than the high motivation of midwives.

Motivation is external stimulation in the form of objects or not objects that can foster encouragement for people to possess enjoy, master, or reach objects / not object (Mubarak, 2011). Motivation is a driver for midwives in conducting performance in ANC services on examining pregnant women, here we can be seen from the willingness and high ability to adapt to the community and provide health services in accordance with their duties and functions so that the implementation of tasks is carried out optimally and patients want to do the return visit to the Puskesmas and the midwife were increasingly motivated in providing examination services for pregnant women to patients, so that the performance of midwives was getting better and more satisfying. The high motivation of midwives (47.8%) from questionnaire answers because they are motivated in quality pregnancy services, using their own potential as midwives, feeling comfortable with the conditions of the work environment as midwives, being able to complete tasks as midwives according to the specified time, can cooperate with other colleagues in achieving work goals, able to carry out work easily and carefully as midwives in pregnancy services and feel safe in carrying out work as midwives.

5. CONCLUSION

a. There is a relationship between age and midwife's performance in ANC services at Ransiki Health Center (p-value 0.002; RP = 2.697; CI95% = 1.262 - 5.763).
b. There is a relationship between employee status and the performance of midwives in ANC services in Ransiki Health Center (p-value 0.001; RP = 7.333; CI95% = 2.821; CI95% 1.416 - 5.619).
c. There is a relationship between tenure and performance of midwives in ANC services at Ransiki Health Center in South Manokwari Regency (p-value 0.000; Rp. 3.864; CI95% (1.782 - 8.377).
d. There is no correlation between knowledge with the performance of midwives in ANC services at Ransiki Health Center (p-value 0.717; RP = 1,200; CI95% (0.735 - 1,960).
e. There is a relationship between attitudes and performance of midwives in ANC services at Ransiki Health Center (p-value 0.016; RP = 1.895; CI95% (1,191 - 3,015).
f. There is a correlation between motivation and midwife's performance in ANC services at Ransiki Health Center (p-value 0.000; RP = 2,750; CI95% (1,464 - 5,164).

REFERENCES

- AL Rantetampang, A Mallongi, 2014. Environmental Risks Assessment Of Total Mercury Accumulation At Sentani Lake
• Hasibuan Malayu S.P (2012). Ilmu Kebidanan, Penyakit Kandungan dan Pendidikan Keluarga Berencana untuk Pendidikan Bidan. EGC, Jakarta.
• Karwati..., Dewi PL., dan Mujiati (2011). Asuhan Kebidanan V (Kebidanan Komunitas), CV.Trans Info Media, Jakarta.
Salomina Inyomusi et.al. The Factors Affecting To the Performance of Midwifery in Antenatal Care Services of Mother and Children's Health Program in Ransiki Health Primary Manokwari Selatan District and Bintuni Borderline


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Morphology and Morphometric Analysis of the Mental Foramen in Dry Adult Human Mandibles from North India

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ABSTRACT

Introduction: The mental foramen is an important anatomical landmark, known to transmit mental nerve, a branch of the inferior alveolar nerve to supply the lower lip, gum and also the buccal vestibule anterior to the first mandibular molar. The position of the mental foramen has been shown to vary according to race. Therefore, this study was carried out to provide information on the location and other relative parameter of the mental foramen in mandibles of the north Indian population.

Materials and methods: Sixty four dry adult human mandibles were examined in this study. Various morphological and morphometrical parameters were measured by using vernier caliper, divider and scale on the right and left sides of the mandible.

Result: In the present study the most common position of the mental foramen was in line with the longitudinal axis of the mandibular second premolar and was found to be in 67.46 % of the cases on the right side and 65.06 % on the left side. The mean distance of the mental foramen from the symphysis menti was 26.12±6.76 mm and 25.91±7.10 mm on the right and left sides respectively and from the posterior border of the ramus was 71.71±7.10 mm and 71.78±7.92 mm on the right and left sides respectively. The mental foramen was situated at a mean distance of 15.11±2.71 mm on the right side and 14.14±3.12 mm on the left side from the mandibular base and at a mean distance of 13.01±3.21 mm on the right side and 14.13±3.00 mm on the left side from the alveolar crest. The most prevalent shape was found to be oval on both sides (71.87% on right and 60.93% on left side). The mean transverse diameters was 3.45±0.70 mm on right and 2.90±0.87 mm on left sides whereas the mean vertical diameters was 2.33±0.56 mm and 2.23±0.94 mm on right and left sides respectively. The knowledge of the position of mental foramen helps surgeons in planning surgery in the oral and maxillofacial region to avoid nerve damage and also enable effective mental nerve block anesthesia.

Key words: Mental foramen, mandible, mental nerve, morphometric.

INTRODUCTION

The mental foramen is present on the external surface of each side of the mandible. It transmits mental nerve, a branch of the inferior alveolar nerve to supply the lower lip, gum and also the buccal vestibule anterior to the first mandibular molar. [1,2] The identification and precise location of the mental foramen is of great importance to dental surgeon during the surgical procedures on the mandible, such as the curettage of the premolars, filling procedures, dental implants, root canal treatments, orthognathic surgeries, pre-prosthetic surgery and flap operation of lower teeth region. [3-5] Schaeffer [6] observed that the mental foramen is located between the apices of the lower premolars. According to Tebo and Telford, [7] location of the mental foramen is below the apex of second mandibular premolar which was comparative to the finding of Sanker et al. [8] The variations in the shape, size, location of mental foramen have been reported, which are influenced by individual, gender, age, race and accessing technique used. Considering these factors, the present study was undertaken to provide...
information on the location and other relative parameter of the mental foramen in mandibles of the north Indian population. Knowledge of the most common position of the mental foramen of a local population provides additional information in the mental nerve blocks and surgical procedures on the mandible.

MATERIALS & METHODS

The study was conducted on 64 dry human adult mandibles obtained from the Department of Anatomy, Faculty of Dentistry Jamia Millia Islamia University, Delhi, and Sudha Rustagi College of Dental Science & Research Institute, Faridabad (Haryana), India. Only complete mandibles with either all the teeth intact or with well-preserved alveolar margins were selected for the measurement. Damaged, mutilated, extensive attrition and deformed mandibles were excluded from the present study.

Before measuring, mandibles were placed on a standard horizontal plane to which the lower border of the mandible get its most contact when vertical pressure is applied to the molars. [9-11] The various parameters measured using vernier caliper, divider and scale, on the right and left sides of the mandible, are as follows: -

1) Relations of the mental foramen to the mandibular teeth: -

The position of the mental foramen in relation to the mandibular teeth was measured and expressed as a percentage for each of the six positions described by Tebo and Telford. [7] They are: -

Relation I - mental foramen situated anterior to the first premolar.
Relation II - mental foramen situated at the apex of the first premolar.
Relation III - mental foramen situated between the apices of the two premolars.
Relation IV - mental foramen situated at the apex of the second premolar.
Relation V - mental foramen situated posterior to the second premolar.
Relation VI - mental foramen situated below the root apices of the first molar.

2) Distances of the mental foramen from various mandibular landmarks:-

The following distances were measured from the most anterior portion of the anterior border of the mental foramen (point mf) as shown in Figure 1.

a) Distance between most anterior margin of mental foramen (mf) and the symphysis menti: (mf-A)
b) Distance between most anterior margin of mental foramen (mf) and posterior border of ramus of mandible: (mf-P).
c) Distance between most anterior margin of mental foramen (mf) and alveolar crest: (mf-S).
d) Distance between most anterior margin of mental foramen (mf) and inferior border of mandible: (mf-I).

Figure 1. Photograph showing measurement of mental foramen (mf) from various mandibular landmarks, (a) Symphysis menti (mf-A) (b) Posterior border of mandibular ramus (mf-P) (c) mandibular alveolar margin (mf-S) and (d) Mandibular base (mf-I).

The above measurements were taken bilaterally in all the mandibles using a divider with two fine tip ends and then transferred to a vernier caliper. The distance of the mental foramen from various landmarks was recorded as an average of two measurements which were measured independently by two different people. The mean and standard deviation for each distance were calculated individually for right and left sides.

3) Dimensions of the mental foramen: -

The transverse and vertical diameters of mental foramen passing through the center of the foramen were measured with the help of a vernier caliper. In addition the shape of
the mental foramen was also noted. All the results thus obtained were expressed as mean ± standard deviation.

RESULT

The distributions of the position of mental foramen in relation to mandibular teeth are shown in Tables I.

Table I. Relation of the mental foramen to the mandibular teeth.

<table>
<thead>
<tr>
<th>Relation</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>II</td>
<td>1 (1.20)</td>
<td>2 (2.40)</td>
</tr>
<tr>
<td>III</td>
<td>18 (21.68)</td>
<td>17 (20.48)</td>
</tr>
<tr>
<td>IV</td>
<td>56 (67.46)</td>
<td>54 (65.06)</td>
</tr>
<tr>
<td>V</td>
<td>7 (8.43)</td>
<td>9 (10.84)</td>
</tr>
<tr>
<td>VI</td>
<td>1 (1.20)</td>
<td>1 (1.20)</td>
</tr>
</tbody>
</table>

Relation I - mental foramen situated anterior to the first premolar.
Relation II - mental foramen situated at the apex of the first premolar.
Relation III - mental foramen situated between the apices of the two premolars.
Relation IV - mental foramen situated at the apex of the second premolar.
Relation V - mental foramen situated posterior to the second premolar.
Relation VI - mental foramen situated below the root apices of the first molar.

The most common position of the mental foramen relative to the lower teeth was position IV (Figure 2) i.e. in line with second mandibular premolar and was found to be in 67.46 % of the cases on the right side and 65.06 % on the left side. It was followed by the position of mental foramen in line with the long axis between first and second premolars (Figure 3), and was 21.68 % and 20.48 % on right side and left side respectively. No foramen was observed anterior to the first premolar on both sides of the mandible (Figure 4).
The measurements of the mental foramen on both sides of the mandible from various parameters are summarized in Table II.

Table II. Distance of mental foramen from various mandibular bony landmarks.

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Right (Mean ± SD) mm</th>
<th>Left (Mean ± SD) mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>mf-A</td>
<td>26.12±6.76</td>
<td>25.91±7.10</td>
</tr>
<tr>
<td>mf-P</td>
<td>71.71±7.10</td>
<td>71.78±7.92</td>
</tr>
<tr>
<td>mf-S</td>
<td>13.01±3.21</td>
<td>14.13±3.00</td>
</tr>
<tr>
<td>mf-I</td>
<td>15.11±2.71</td>
<td>14.14±3.12</td>
</tr>
</tbody>
</table>

mf-A --- Distance between the mental foramen and the mandibular symphysis.
mf-P --- Distance between the mental foramen and the posterior border of the mandibular ramus.
mf-S --- Distance between the mental foramen and the alveolar margin of mandible.
mf-I --- Distance between the mental foramen and the base of mandible.

The distance between the most anterior margin of mental foramen to the symphysis menti was 26.12±6.76 mm on right side and 25.91±7.10 mm on left side, whereas the distance between the posterior border of ramus of mandible and anterior margin of mental foramen was 71.71±7.10 mm on right side and was 71.78±7.92 mm on left side. The distance between the most anterior margin of mental foramen and alveolar crest was 13.01±3.21 mm on right side and 14.13±3.00 mm on left side and between the most anterior margin of mental foramen and inferior border of the body of mandible was 15.11±2.71 mm and 14.14±3.12 mm on right and left sides, respectively.

The shape of mental foramen was visually observed and analyzed in all the 64 mandibles and it was predominantly found in the oval form in both right and left sides of the mandible (Table III).

Table III. Shape and size of the mental foramen in mandible.

<table>
<thead>
<tr>
<th>Shape</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oval</td>
<td>71.87%</td>
<td>60.93%</td>
</tr>
<tr>
<td>Round</td>
<td>28.12%</td>
<td>39.06%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size</th>
<th>Right (Mean ± SD) mm</th>
<th>Left (Mean ± SD) mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transverse</td>
<td>3.45±0.70</td>
<td>2.90±0.87</td>
</tr>
<tr>
<td>Vertical</td>
<td>2.33±0.56</td>
<td>2.23±0.94</td>
</tr>
</tbody>
</table>

On right side, it was oval in 71.87% cases and round in 28.12% cases, whereas on left side it was oval in 60.93% cases and round in 39.06% cases. The mean transverse diameter was 3.45±0.70 mm on the right side and 2.90±0.87 mm on the left side, and mean vertical diameter was 2.33±0.56 mm and 2.23±0.94 mm on right and left side respectively.

**DISCUSSION**

The mental foramen represents the end of the mandibular canal, is usually a single opening on the anterolateral aspect of the mandible. Inferior alveolar nerves and vessels after traversing the mandibular canal, exit through the mental foramen as the mental nerves and vessels. The morphological knowledge of the position of the mental foramen is clinically critical while performing periapical surgery, cyst enucleation, endosseous implant, periodontal surgery and surgical orthodontic treatments such as a mandibular body osteotomy, in order to prevent damage to the mental nerve. Moreover, while administering mental nerve block, the precise location of the mental foramen will facilitate dental surgeons to avoid injury to the neurovascular bundles followed by complications like paresthesia and trauma. The present study was conducted to identify the location of the mental foramen and its distances from different bony landmarks on mandible in north Indian population.

In the present study, the most common position of mental foramen was below the apex of second mandibular premolar tooth and the interval between the two premolars was the second most common site (Table I). In relation to second premolar, the location of mental foramen was 67.46% on right side and 65.06% on left side. While between two premolars it was 21.68% on right side and 20.48% on left side. This is in accordance with Sankar et al, Wang et al, Budhiraja V et al, Udhaya K et al, Gupta S et al and Singh R et al. This finding differed significantly from the finding of Moogla S et al and Rai R et al, who reported that the most common location of mental...
foramen is between first and second premolars.

In the present study, mental foramen on an average lies at a distance of 26.12±6.76 mm on right side and 25.91±7.10 mm on left side from the symphysis menti of the mandible and that from posterior border of the ramus of the mandible was 71.71±7.10 mm and 71.78±7.92 mm on the right and left side respectively. Sankar DK et al [8] studied 90 mandibles and observed that the distance of mental foramen from the symphysis menti of the mandible was 27.2±2.4 mm on right side and 27.7±2.4 mm on left side, whereas from posterior border of ramus it was 70.7±4.2 mm on the right side and 70.7±4.2 mm on the left side. According to Udhaya K et al [14] mental foramen was located at the distance of 25.79±1.78 mm on right side and 25.29±2.29 mm on left side from the symphysis menti, whereas it was 64.51±4.06 mm and 63.92±4.26 mm from the posterior border of the mandible ramus on right and left side respectively. Rai R et al [19] in 2014 did measurements on 40 adult mandibles of unknown sex, and reported the distance of the mental foramen to the symphysis menti was 22.41±2.57 mm and 22.23±2.48 mm on the right and the left sides, respectively, and the distance to the posterior border of the mandibular ramus was 63.67±7.36 mm on the right side and 63.73±7.39 mm on the left side. According to Singh R et al [17] the distance of the mental foramen to the symphysis menti of the mandible was 29.3 mm and 30.6 mm on the right and the left sides, respectively. The distance to the posterior border of the mandible was 71.8 mm on the right side and 84.7 mm on the left side. Gupta S et al [16] in their study observed that the mental foramen was located at the distance of 29.12 mm from the symphysis menti and 76.16 mm from the posterior border of the ramus of mandible.

In the study of Sankar DK et al [8] the distance between mental foramen and base of the mandible was 16.5±2.1 mm on right side and 14.3±2.1 mm left side, whereas it was at a distance of 13.7±2.8 mm and 16.4±2.9 mm from the alveolar margin on right and left sides respectively. Udhaya K et al [14] reported that the mean distance of mandibular foramen from mandible base was 12.65±1.59 mm on right side and 12.77±1.73 mm on left side and from alveolar margin was 12.02±2.48 mm on right side and 12.21±2.61 mm on left side. According to Rai R et al, [19] the mean distance between base of mandible and mental foramen on right side was 12.43±1.95 mm while on left side it was 12.17±1.72 mm and mean distance between mental foramen and alveolar crest of mandible on right side was 11.48±1.58 mm and on left side was 11.41±1.43 mm. Singh R et al [17] observed that the distance of the mental foramen to the lower border of the mandible was 17.3 mm and 13.3 mm on the right and the left sides, respectively. The distance to the upper border was 17 mm on the right side and 18.6 mm on the left side. In the study of Gupta S et al [16] mental foramen was situated at a mean distance of 14.45 mm from the base of mandible. In the present study the mandibular foramen was situated from base of the mandible at an average distance of 15.11±2.71 mm on the right side and 14.14±3.12 mm on the left side and from alveolar margin of mandible was 13.01±3.21 mm and 14.13±3.00 mm on right and left side respectively.

Slight variations in the findings were observed, probably due to the standardization of the location of the mental foramen, which was the most anterior portion of the anterior border of the mental foramen. Besides the variability in the methodology, it may be due to the variation in size and form of the studied mandibles.

In the present study, we observed that the mental foramen was oval shaped in 71.87% on the right side and 60.93% on the left side of the mandible. It was round shaped in 28.12% and 39.06% on the right and left side of the mandible respectively. These values are in congruence with Budhiraja V et al [14] and Udhaya K et al, [15] who also observed majority of mental

The present study demonstrated the mean transverse diameter of the mental foramen was 3.45±0.70 mm for the right side and of 2.90±0.87 mm for the left side, while the vertical diameter was 2.33±0.94 mm on the left side. A study which was done on south Indian population [14] reported the horizontal diameter of the mental foramen to be 2.28±0.71 mm on the right side and to be 2.95±0.68 mm on the left side, and the vertical diameter was 2.86±0.83 mm on the right side and 2.52±0.87 mm on the left side. Rai R et al [19] described the mean horizontal diameter of the mental foramen to be 2.63±0.85 mm on the right side and to be 2.61±0.85 mm on the left side along with the vertical diameter as 2.33±0.64 mm on the right side and 2.29±0.60 mm on the left side. According to Budhiraja V et al [14] horizontal diameter of mental foramen was 5.19±0.24 mm on the right side and 5.12±0.28 mm on the left side. The vertical diameter was 2.61±0.17 mm and 2.53±0.14 mm on right and left sides respectively. Sankar DK et al [8] measured the average size of the mental foramen and it was 2.8 mm on the right side and 3.3 mm on the left side of the mandible. There are divergences in studies regarding the location, shape and size of mental foramen in human mandibles. This may be related to naturally occurring differences in facial structure, feeding habit induced bone remodelling and difference in strategies used to record mental foramen data.

In conclusion, this study adds information to the literature concerning the location of the mental foramen in the north-Indian population. The knowledge may assist surgeons to localize the mental foramen and avoid injury to the neurovascular bundles in local anesthesia, surgical and other invasive procedures of the oral and maxillofacial region.

REFERENCES

Relationship between Physical Condition of House Environment and the Incidence of Pulmonary Tuberculosis, Aceh, Indonesia

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ABSTRACT

Background: Tuberculosis (TB) is a direct infectious disease caused by Mycobacterium tuberculosis. Most of the TB germs attack the lungs, but they can also affect other organs. From the health profile data in Lhoong Community Health Center (CHC) in 2015 there were 5 pulmonary tuberculosis cases, while in 2016 there were 13 pulmonary TB cases.

Aim: This study aims to determine the correlation between ventilation, lighting, humidity, occupancy density, type of floor and house temperature with the incidence of pulmonary tuberculosis in the work area of Lhoong CHC Aceh Besar District in 2018.

Methods: This was an observational study with case control design. The total samples were 39 people including 13 case samples plus 26 control samples during 2018. Data for the independent variables were obtained by questionnaire, observation and measurement. Data analysis used chi square.

Results: Bivariate analysis resulted that ventilation, lighting, occupancy density, humidity, and type of floor were related to the incidence of pulmonary TB in the work area of Lhoong CHC, Aceh Besar District. The multivariate analysis resulted that occupancy density (OR= 30.8; 95%CI= 2.8-336.4) and ventilation (OR= 17.2; 95%CI= 1.6-178.9) were the most risk factors of pulmonary TB.

Conclusions: Occupancy density and ventilation were the most risk factors of pulmonary TB in the work area of Lhoong CHC Aceh Besar District in 2018.

Keywords: Pulmonary TB, occupancy density, ventilation, Aceh.

INTRODUCTION

According to Law of the Republic of Indonesia No. 36 of 2009 on Health article 1 paragraph 1, Health is a state of complete physical, mental, spiritual and social well-being which enables everyone to live productively socially and economically. [¹] A poor environmental sanitation can become a way for disease transmission. The occurrence of environmental-based diseases is caused by the interaction between humans and the environment, especially for people who spend a lot of time at home. If the sanitation of the house environment is not well maintained, it has the potential to cause an illness. Some environmental-based diseases include Acute Respiratory Tract Infection (ARI), diarrhea, malaria, Dengue Hemorrhagic Fever (DHF), Tuberculosis (TB), helminthiasis, and skin diseases. [²]

Tuberculosis is a disease that becomes a global concern. [²,³] Globally, TB is one of the top 10 causes of death and the leading cause from a single infectious agent. Millions of people were infected with TB each year. In 2017, TB caused an estimated 1.3 million deaths. It is estimated that 10 million people infected TB in 2017. There were cases in all countries and age groups, but overall 90% were adults (aged ≥15 years) and two thirds were in eight countries: India (27%), China (9%), Indonesia (8%), the Philippines (6%), Pakistan (5%), Nigeria (4%), Bangladesh (4%) and South Africa (3%). [²]
Tuberculosis is still a major public health problem. The disease is often associated with a slum environment. House environmental factors that can affect the incidence of pulmonary TB include ventilation of the room, humidity, temperature, lighting, type of floor, and occupancy density.

Based on health profile of Aceh Besar District Health Office, the incidence of tuberculosis in Aceh Besar District in 2013 was 73.23 per 100,000 people with a total of 272 cases with the highest cases in Subulimum Subdistrict (26 cases), followed by Darul Imarah Subdistrict (23 cases) and Kuta Baro Subdistrict (18 cases) and Seulawah Valley Subdistrict (18 cases).

From the health profile data in Lhoong Community Health Center (CHC) in 2015 the number of suspected tuberculosis screening had not been able to reach the target of 70% of the population; however the prevalence of pulmonary TB cases had increased. In 2015 pulmonary TB cases were 5 people, whereas in 2016 pulmonary TB cases were 13 people from an estimated 16 new cases. From the results of a study conducted by Rosiana it was found that there was a significant correlation between the type of floor, type of wall, lighting intensity and humidity with the incidence of pulmonary TB. There was no correlation between bedroom occupancy density and ventilation area with the incidence of pulmonary tuberculosis.

Research conducted by Mayangsari and Korneliani, it was found that the mean of age of respondents was 40-45 years, there were 38% of male respondents and 62% of female respondents. The study showed that there were correlations between occupancy density, bedroom occupancy density, there is a relationship between bedroom windows and ventilation with the incidence of pulmonary TB.

This study aims to determine the correlation between physical condition of house environment and the incidence of pulmonary TB in the work area of Lhoong CHC Aceh Besar District.

### MATERIAL AND METHODS

The type of study design used here was a case-control study. The population of this study were AFB positive pulmonary TB patients who were treated at Lhoong CHC in Lhoong Subdistrict for the past year. In 2017 there were 13 positive pulmonary TB sufferers with a comparison between cases: control = 1:2, which consisted of 13 respondents in the case group and 26 respondents in the control group, thus the total number of samples was 39 people. Cases were respondents who had AFB positive pulmonary TB with a history of clinical symptoms recorded at the Lhoong CHC, became the part of the pulmonary TB management. Controls were people who lived around the cases, usually the closest neighbors who did not have pulmonary TB.

The study location was in Lhoong Subdistrict in the work area of Lhoong Community Health Center in Aceh Besar District. The study was conducted in February 2018. The instruments used in this study were questionnaires, observation sheets, hygrometers used to measure air humidity and lux meters. Data analysis was conducted with statistical tests used Chi Square test.

### RESULTS

The number of respondents was 39 respondents, consisting of 13 case respondents, and 26 control respondents. The characteristics of respondents are presented in Table 1 below:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number of Case (%)</th>
<th>Number of Control (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>8 (61.5)</td>
<td>18 (69.2)</td>
</tr>
<tr>
<td>Female</td>
<td>5 (38.5)</td>
<td>8 (30.8)</td>
</tr>
<tr>
<td>Age (year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-18</td>
<td>1 (7.70)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>19-50</td>
<td>6 (46.15)</td>
<td>16 (61.54)</td>
</tr>
<tr>
<td>&gt;50</td>
<td>6 (46.15)</td>
<td>10 (38.46)</td>
</tr>
</tbody>
</table>

Table 1 showed that 61.5% of respondents infected by pulmonary TB were male and mostly were in the age group of 19-50 and >50 years (46.15%). The study...
results on the physical condition of the house related to the incidence of pulmonary TB in the Work Area of Lhoong CHC in 2018 are presented in Table 2 below:

Table 2. Results of bivariate analysis of physical condition of the house and the incidence of Pulmonary TB in the work area of Lhoong CHC, 2018

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cases (%)</th>
<th>Controls (%)</th>
<th>P value</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ventilation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not eligible</td>
<td>11 (84.6)</td>
<td>7 (26.9)</td>
<td>0.002</td>
<td>14.9 (2.6-84.9)</td>
</tr>
<tr>
<td>Eligible</td>
<td>2 (15.4)</td>
<td>19 (73.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lighting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not eligible</td>
<td>8 (61.5)</td>
<td>7 (26.9)</td>
<td>0.04</td>
<td>4.3 (1.1-17.9)</td>
</tr>
<tr>
<td>Eligible</td>
<td>5 (38.5)</td>
<td>19 (73.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupancy density</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not eligible</td>
<td>9 (69.2)</td>
<td>2 (7.7)</td>
<td>0.000</td>
<td>27 (4.2-173.8)</td>
</tr>
<tr>
<td>Eligible</td>
<td>4 (30.8)</td>
<td>24 (92.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not eligible</td>
<td>13 (100)</td>
<td>7 (26.9)</td>
<td>0.000</td>
<td>-</td>
</tr>
<tr>
<td>Eligible</td>
<td>0 (0)</td>
<td>19 (73.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of floor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not eligible</td>
<td>8 (61.5)</td>
<td>0 (0)</td>
<td>0.000</td>
<td>-</td>
</tr>
<tr>
<td>Eligible</td>
<td>5 (38.5)</td>
<td>26 (100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not eligible</td>
<td>10 (76.9)</td>
<td>23 (88.5)</td>
<td>0.310</td>
<td>0.4 (0.1-2.5)</td>
</tr>
<tr>
<td>Eligible</td>
<td>3 (23.1)</td>
<td>3 (11.5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 showed that the physical condition of the house: ventilation, lighting, occupancy density, humidity and type of floor were related to the incidence of pulmonary TB in the work area of Lhoong CHC in Aceh Besar District (p value <0.05) while there was no significant correlation between temperature and the incidence of Pulmonary TB (p value >0.05).

Table 3. Results of multivariate analysis of physical condition of the house and the incidence of Pulmonary TB in the work area of Lhoong CHC, 2018

<table>
<thead>
<tr>
<th>Variables</th>
<th>P value</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupancy density</td>
<td>0.005</td>
<td>30.8</td>
<td>2.8 – 336.4</td>
</tr>
<tr>
<td>Ventilation</td>
<td>0.017</td>
<td>17.2</td>
<td>1.6 – 178.9</td>
</tr>
<tr>
<td>Constant</td>
<td>0.004</td>
<td>0.00</td>
<td></td>
</tr>
</tbody>
</table>

The multivariate analysis showed that the most related factor of pulmonary TB in the work area of Lhoong CHC was occupancy density (P value: 0.005).

DISCUSSION

House ventilation is related to pulmonary TB because in general the houses of people with pulmonary TB have ventilation in the form of windows but the windows are not opened because they are ashamed to open them since it will be visible to outsiders. [6] There was a correlation between ventilation and the incidence of pulmonary TB in accordance with the results of a study conducted by Toni Lumban Tobing on the Effect of Behaviors of the Patients with Pulmonary TB and Sanitary Conditions on the Prevention of Potential Transmission of Pulmonary TB. [8] The similar result was also found in the study conducted by Helda Suarni on the risk factors associated with the incidence of pulmonary TB in Pancoran Mas District Depok in 2009. [11]

From the study results it can be seen that the most of the lighting condition in case and control was the eligible lighting condition of 53.8%, while not eligible lighting condition was 46.2%. In non eligible lighting condition, there were 61.1% of respondents in case and 38.9% of respondents in control. The results of the statistical test obtained a value of p <0.05 (p=0.036), then there was a significant correlation between the lighting condition and the incidence of pulmonary TB in the work area of Lhoong CHC in Aceh Besar District. Odds ratio of 1.056 indicated that respondents who had poor lighting condition were at risk of 1,056 times infected with pulmonary TB than respondents who had good lighting.

This is in accordance with the results of a study on the correlation between house environmental factors and the incidence of pulmonary TB transmission in households. [3,6] The study found that poor lighting condition was at risk of being exposed to...
pulmonary TB when compared to houses with sufficient sunlight.\(^{12,13}\)

Lighting condition was a significant risk factor. It can be seen from the study results above. With poor lighting, the development of pulmonary TB germs will increase because sunlight is one of the factors that can kill the pulmonary TB germs. Thus, if the lighting is good then germs transmission and proliferation can be prevented. This had a significant correlation because air humidity is one of the factors that cause the growth of bacteria especially tuberculosis bacteria which can thrive and multiply well. Respondents with AFB Positive Pulmonary Tuberculosis living in houses with high humidity were correlated to the incidence of AFB positive pulmonary tuberculosis because it is a good medium for the growth and proliferation of tuberculosis germs. The higher the air temperature, the lower the humidity will be. This will increase body heat loss and the body will try to balance the temperature of the environment through the evaporation process. This loss of body heat will reduce the body's vitality and is a predisposition factor to infection by an infectious agent.\(^{14}\)

In the study conducted by Toni Lumban Tobing on the Effect of Behaviors of the Patients with Pulmonary TB and Sanitary Conditions on the Prevention of Potential Transmission of Pulmonary TB among Families in North Tapanuli District, it was found that occupancy density condition had a significant correlation with TB disease. It can be seen from the Ods Ratio of 3.3 which meant that people living in environment with poor occupancy density were at risk of pulmonary TB transmission by 3.3 times more than those living in environment with good occupancy density condition.\(^{12}\) The occupancy density greatly influenced the transmission of pulmonary TB disease, because the pulmonary TB can be transmitted through air media so that these germs are easily transmitted when the house is located in a dense area.\(^{3}\) If the house is not in a dense area, the circulation becomes smooth so that patients and other family members can be prevented from the transmission of pulmonary TB.\(^{15,16}\)

There was a significant correlation between the condition of the floor type and the incidence of pulmonary tuberculosis in the work area of Lhong CHC in Aceh Besar District. Odds ratio of 0.000 indicated that respondents who had poor type of floor had the same risk with those who had good type of floor to be infected with pulmonary TB. This is in accordance with the results of a study conducted by Toni Lumban Tobing on the Effect of Behaviors of the Patients with Pulmonary TB and Sanitary Conditions on the Prevention of Potential Transmission of Pulmonary TB. The study found that the floor had an effect on the transmission of TB.\(^{12}\) However, there was also a study conducted by Rustono on the factors related to the incidence of pulmonary TB which found that dirty floors and dust can be a vehicle for transmission of TB if the patient removes saliva or phlegm on the floor.

The study results found that the total of not eligible temperature condition in case and control was 85.6% and eligible temperature condition was 15.4%. It can be seen that not eligible temperature condition was more than eligible temperature condition. Although in this study the temperature did not have a correlation (p=0.3) with the incidence of pulmonary TB, the temperature still had a role in the transmission of pulmonary TB. Mycobacterium tuberculosis bacteria have a preferred temperature range, but in this temperature range there is an optimum temperature that allows them to grow tightly. Mycobacterium tuberculosis is a mesophilic bacteria that thrives in a range of 25-40\(^{\circ}\) C, but will grow optimally at the temperatures of 31-37\(^{\circ}\) C.\(^{17}\)

**CONCLUSIONS**

There were correlations between ventilation, lighting, humidity, occupancy density, type of floor with the incidence of pulmonary tuberculosis and there was no correlation between temperature and the incidence of pulmonary tuberculosis in the
Work Area of Lhoong CHC, Aceh Besar District

Recommendations

There is an importance of counseling about the negative implications of pulmonary TB disease to patients related to the cause of pulmonary TB infection, how to prevent pulmonary TB disease and appropriate treatment methods for pulmonary TB disease, counseling about healthy house environment, especially in pulmonary TB patients who live in high density houses, as well as temperature, ventilation, humidity, types of floors that do not meet the requirements to prevent the severity of pulmonary TB disease. Community empowerment should be increased by training cadres to improve surveillance of case finding and help prevent transmission of pulmonary TB disease.

REFERENCES


ABSTRACT

Background: Malaria is still a health problem in the world, including in Indonesia. West Papua Province is endemic to malaria. The efforts made by the Bintuni Bay District have been successful in malaria engineering related to malaria control programs that are influenced by the quality, quantity and distribution of health workers, logistical continuity, cross-sector coordination, community participation, malaria control according to early case findings and accurate treatment (early diagnostic accurate treatment), consistency of government policies, financing and surveillance systems.

Objectives: Study Of Successful Malaria Eliminate Program At Teluk Bintuni District

Methods: Qualitatively implemented in November - December 2018. Informants were 26 people. Data obtained using in-depth interviews and analyzed qualitatively.

Results: The quality and quantity of distribution of malaria control health workers has been carried out well with the presence of microscopic energy and energy. The sustainability of malaria logistics in the Bintuni Bay Regency is adequate. Cross-sectoral coordination in the identification of malaria has been carried out properly. Community participation in malaria control is quite good. Malaria control has been carried out well through the EDAT program in the establishment of village malaria interpreters in taking blood and treating malaria. Consistent policy of the government of Bintuni Bay District is very supportive in eliminating malaria. The surveilance system runs optimally. Malaria coverage is based on regent regulation No. 11 is predicted to reach the set target.

Keywords: The Successful Eliminate, Malaria Program, Teluk Bintuni District

1. INTRODUCTION

Indonesia targets malaria elimination in 2030 and in the Ministry of Health's Strategic Plan In 2015-2019 malaria elimination is one of the targeted diseases to reduce the illness rate from 2 per thousand population to 1 per 1,000 population. The target of malaria elimination in Indonesia in 2019 from the 2012 results of 212 increased to 300 Regencies / Cities (RI Ministry of Health, 2015). Malaria morbidity in an area is determined by Annual Parasite Incidence (API) per year. API is the number of malaria positive cases per 1,000 residents in one year. National API trends in 2011 (API, 175) to 2015 (API 0.85) continued to decline which can be seen in the graph of the Malaria API trend in Indonesia in 2011 - 2015.

Malaria prevention efforts have been carried out since 1959 which was marked by the launching of the malaria eradication program known as the "Malaria Extermination Command" (KOPEM) by President Soekarno. In 2000 the community movement was known as the Movement to Fight Back Malaria or "Gurgling Malaria" which was followed by various sectors with the slogan "Let's Fight Malaria".
Furthermore, malaria control in Indonesia enters the phase of malaria elimination as stipulated in the Decree of the Minister of Health of the Republic of Indonesia Number 293 / MENKES / SK / IV / 2009 which aims to create healthy living communities, which are gradually free from malaria transmission until 2030 (RI Ministry of Health, 2013).

Research in Bali Province by Roosiermiatie and Rukmini (2013), about the analysis of the implementation of malaria elimination policies in Bali Province showed the success of the API decline. This success is based on an understanding of the malaria elimination policy regarding the procedures for implementing malaria elimination in Bali Province and the Regulation of the Regent of Karangasem No. 2 of 2010 concerning elimination of Malaria in Karangasem Regency is sufficient in accordance with the central strategy. Funding for malaria elimination policies in Bali Province and Karangasem Regency still relies on funds from the APBD. The role of the regional government to support the malaria elimination policy is quite good, local government support in the form of policy / regulatory support, budgeting and socialization activities. Bintuni Bay Regency has declared malaria elimination in West Papua Province in 2020 which can be seen in Figure 1.3 in 2009 - July 2018.

The elimination phase is expected to be achieved by 2020 malaria cases become zero, there are only imported cases or cases from outside the Bintuni Bay Regency area considering the location of the Bintuni Bay Regency which is the gateway to West Papua Province so that population mobility is quite high, and this means difficult to control the entry of malaria cases from outside the Bintuni Bay Regency. Furthermore, at the maintenance stage, if for two years until 2026 local cases remain zero and if there are cases of malaria, these cases originating from outside the area must be quickly detected and carried out so that treatment is not contagious to the residents of Bintuni Bay Regency.

Based on preliminary studies from interviews with the Head of the Bintuni Bay District Health Office, the efforts of the Bintuni Bay government in suppressing malaria cases by making the EDAT program (early diagnostic accurate treatment) invite the participation of the community to actively participate in malaria elimination programs in the area as health cadres or health volunteers who are trained to be able to provide early treatment for malaria, in addition to diagnosing malaria in patients, they are also given provisions in terms of drug administration, prevention and reviving community movements. In addition, some programs are aimed at eliminating malaria with planning management carried out by Bintuni Bay District in malaria elimination.

Based on this, the researchers were interested in conducting research under the title of Study of the Success of the Malaria Elimination Program in the Bintuni Bay Regency of West Papua Province.

2. MATERIALS AND METHODS

2.1. Type of Research

This type of research is qualitative descriptive research. Syaodih (2008) states that descriptive research is the most basic form of research. Aimed at natural or human engineering conditions. According to Syaodih (2008) in Pongtiku, et al (2016) that qualitative research is a study aimed at describing and analyzing phenomena, events, social activities, attitudes, beliefs, perceptions, thoughts of individuals individually and in groups ". This type of research is qualitative with a case study approach, which is a method of research conducted with the aim of describing the problem that occurs to conclude the image objectively (Swarjana, 2013). Focus on research to understand the factors that influence the success of the Malaria Elimination Program in Bintuni Bay District.

2.2. Place and Time of Research

1. Place
This research was conducted at the Bintuni Bay District Health Office. The time of research took place in October 2018.

2.3. Informant

The informants in this study were all policy makers at the Bintuni Bay District Health Office as key informants related to malaria elimination efforts totalling 17 people plus 9 people from community representatives. The selection of informants is done by using a purposive sampling technique, namely taking selected informants is seen to be more clear about malaria elimination (Saryono and Anggraeni, 2010), and can be trusted to be a good source of data and able to express opinions properly and correctly (Notoadmodjo, 2012) The key informants in this study were the Head of Bintuni Bay District Health Office as key informants related to policy makers at the Bintuni Bay District Health Office.

3. RESEARCH RESULTS

3.1. Characteristics of Informants

a. The main informant

Table 1. Characteristics of Main informants

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Age (year)</th>
<th>Education</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>l1</td>
<td>KL</td>
<td>50</td>
<td>S2</td>
<td>Health of Health Department Regency of Teluk Bintuni</td>
</tr>
<tr>
<td>l2</td>
<td>PS</td>
<td>47</td>
<td>S1</td>
<td>Ka.bat P2M</td>
</tr>
<tr>
<td>l3</td>
<td>WJ</td>
<td>54</td>
<td>S1</td>
<td>Ka. Se P2M</td>
</tr>
<tr>
<td>l4</td>
<td>NH</td>
<td>44</td>
<td>D3</td>
<td>Malaria Responsibilty person</td>
</tr>
</tbody>
</table>

Table 1. Respondents who were the main informants as many as 5 people consisted of the Head of the Bintuni Bay District Health Office, Head of the Health Problems Control Section, Head of the Eradication of Communicable Diseases section and the person in charge of malaria

b. Supporting informant

Table 4.2. Characteristics of supporting informants

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>l1</td>
<td>DG</td>
<td>Head of Health centre of Farfurwar</td>
</tr>
<tr>
<td>l2</td>
<td>AK</td>
<td>Head of Health centre of Babo</td>
</tr>
<tr>
<td>l3</td>
<td>IL</td>
<td>Head of Health centre of Sumuri (Tofoi)</td>
</tr>
<tr>
<td>l4</td>
<td>AW</td>
<td>Head of Health centre of Sumuri (Tanah Merah)</td>
</tr>
<tr>
<td>l5</td>
<td>NT</td>
<td>Head of Health centre of Aroba</td>
</tr>
<tr>
<td>l6</td>
<td>TM</td>
<td>Head of Health centre of Kaituro</td>
</tr>
<tr>
<td>l7</td>
<td>MR</td>
<td>Head of Health centre of Kuri</td>
</tr>
<tr>
<td>l8</td>
<td>HS</td>
<td>Head of Health centre of Wamesa</td>
</tr>
<tr>
<td>l9</td>
<td>SS</td>
<td>Head of Health centre of Bintuni</td>
</tr>
<tr>
<td>l10</td>
<td>SA</td>
<td>Head of Health centre of Manimeri</td>
</tr>
<tr>
<td>l11</td>
<td>OW</td>
<td>Head of Health centre of Tuuba</td>
</tr>
<tr>
<td>l12</td>
<td>HM</td>
<td>Head of Health centre of Dataran Beimes</td>
</tr>
<tr>
<td>l13</td>
<td>LG</td>
<td>Head of Health centre of Tembuni</td>
</tr>
<tr>
<td>l14</td>
<td>PR</td>
<td>Head of Health centre of Aranday</td>
</tr>
<tr>
<td>l15</td>
<td>HH</td>
<td>Head of Health centre of Kamundan</td>
</tr>
<tr>
<td>l16</td>
<td>AW</td>
<td>Head of Health centre of Werragar</td>
</tr>
</tbody>
</table>

Table 2 shows that the number of informants who were used as supporting information sources as many as 16 heads of Puskesmas from the 24 heads of Puskesmas was caused by not being present in focus group discussions.

c. Ordinary informant

Table 3. Characteristics of ordinary informants

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Living address</th>
</tr>
</thead>
<tbody>
<tr>
<td>l1</td>
<td>UM</td>
<td>Community in Health centre area of Farfurwar</td>
</tr>
<tr>
<td>l2</td>
<td>IG</td>
<td>Community in Health centre area of Babo</td>
</tr>
<tr>
<td>l3</td>
<td>FA</td>
<td>Community in Health centre area of Sumuri (Tofoi)</td>
</tr>
<tr>
<td>l4</td>
<td>DRN</td>
<td>Community in Health centre area of Sumuri (Tanah Merah)</td>
</tr>
<tr>
<td>l5</td>
<td>FI</td>
<td>Community in Health centre area of Aroba</td>
</tr>
<tr>
<td>l6</td>
<td>SE</td>
<td>Community in Health centre area of Kaituro</td>
</tr>
<tr>
<td>l7</td>
<td>HI</td>
<td>Community in Health centre area of Kuri</td>
</tr>
<tr>
<td>l8</td>
<td>AS</td>
<td>Community in Health centre area of Wamesa</td>
</tr>
<tr>
<td>l9</td>
<td>HS</td>
<td>Community in Health centre area of Bintuni</td>
</tr>
</tbody>
</table>

Table 3 shows that the number of informants used as regular sources of information was 9 people representing each region, namely 9 Puskesmas.

Based on Table 4 shows that the quality of microelectric power with the level of Chemistry Analysis Secondary School education still does not meet the requirements because the level of education should be at least Diploma Three (D3) and if viewed in terms of quantity of micropic power and Survilans is still very lacking because there are 10 health centers that only...
have 1 microelectric power and 1 surveillance staff and even distribution. On the whole microscope and surveillance staffs have received training.

d. Quality and Quantity of Distribution of Health Workers for malaria control

<table>
<thead>
<tr>
<th>No</th>
<th>District / Health Centre</th>
<th>Microscopes</th>
<th>Education</th>
<th>Survey jan/ Malaria program</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Health Centre Farfurwar</td>
<td>2</td>
<td>D3</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>2</td>
<td>Health Centre Babo</td>
<td>1</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>3</td>
<td>Health Centre Samuiri (Tofoi)</td>
<td>2</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>4</td>
<td>Health Centre Samuiri (Tanah Merah)</td>
<td>1</td>
<td>D3</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>5</td>
<td>Health Centre Aroba</td>
<td>2</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>6</td>
<td>Health Centre Kaituro</td>
<td>2</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>7</td>
<td>Health Centre Kuri</td>
<td>2</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>8</td>
<td>Health Centre Wamesa</td>
<td>2</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>9</td>
<td>Health Centre Bintuni</td>
<td>1</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>10</td>
<td>Health Centre Manemerri</td>
<td>2</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>11</td>
<td>Health Centre Manemerri (Muturi)</td>
<td>1</td>
<td>D3</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>12</td>
<td>Health Centre Tuiba</td>
<td>1</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>13</td>
<td>Health Centre Datarean Besmes</td>
<td>1</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>14</td>
<td>Health Centre Tembuni</td>
<td>1</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>15</td>
<td>Health Centre Aranday</td>
<td>2</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>16</td>
<td>Health Centre Kamundan</td>
<td>1</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>17</td>
<td>Health Centre Werasarag</td>
<td>1</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>18</td>
<td>Health Centre Moskona Selatan</td>
<td>1</td>
<td>D3</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>19</td>
<td>Health Centre Meyado</td>
<td>2</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>20</td>
<td>Health Centre Moskona Barat</td>
<td>2</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>21</td>
<td>Health Centre Merdey</td>
<td>2</td>
<td>D3</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>22</td>
<td>Health Centre Masayeta</td>
<td>2</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>23</td>
<td>Health Centre Moskona Utara</td>
<td>2</td>
<td>D3</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td>24</td>
<td>Health Centre Moskona Timur</td>
<td>2</td>
<td>SMAK</td>
<td>1</td>
<td>D3</td>
</tr>
<tr>
<td></td>
<td>Number</td>
<td>38</td>
<td>24</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Distribution of Health Workers in Each Health Service Unit in the Bintuni Bay Regency in 2018

Based on table 5, it can be seen that the use of medicines and consumables is generally sufficient, with the use of the most anti-malarial drugs being Artemisin (ACT) of 10,269 packages, except for those using injection artemether who experience a stock vacuum. While tools and consumables are available.

f. Cross Sector Coordination

<table>
<thead>
<tr>
<th>No</th>
<th>Health development management policy program</th>
<th>Target</th>
<th>Realisasi (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Malaria Control Coordination Meeting</td>
<td>4</td>
<td>4 (100)</td>
</tr>
<tr>
<td>2</td>
<td>Technical Meeting on Malaria Control</td>
<td>4</td>
<td>4 (100)</td>
</tr>
<tr>
<td>3</td>
<td>Revised Meeting of the Malaria Control Plan</td>
<td>4</td>
<td>4 (100)</td>
</tr>
</tbody>
</table>

Table 6. Cross Sector Coordination Data in the Malaria control program for 2018
Table 6 shows that cross-sector coordination from the malaria control coordination meeting, the nature of malaria control, and the revision of the malaria control plan from 4 targeted meetings were carried out 4 times a year (100%).

The results of the interview concluded that in completing malaria in a year there were 4 meetings discussing technical matters and implementing malaria control and evaluating activities that had been carried out.

g. Community Participation in EDAT

Table 7. Cross Sector Coordination Data in the Malaria control program for 2018

<table>
<thead>
<tr>
<th>No</th>
<th>Health Service Improvement Partnership Program</th>
<th>Target</th>
<th>Realisasi</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Formation of Posmalkam</td>
<td>7</td>
<td>13</td>
<td>185.71</td>
</tr>
<tr>
<td>2</td>
<td>Village TOT - PLA Training</td>
<td>11</td>
<td>9</td>
<td>81.82</td>
</tr>
<tr>
<td>3</td>
<td>Malaria counseling from and for the community</td>
<td>17</td>
<td>3</td>
<td>17.65</td>
</tr>
<tr>
<td>4</td>
<td>Vector eradication (Community service, closing mosquito breeding sites, cleaning sewers and standing water)</td>
<td>14</td>
<td>7</td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>Healthy environment arrangement</td>
<td>12</td>
<td>8</td>
<td>66.67</td>
</tr>
<tr>
<td>6</td>
<td>Training on Advocating Malaria control for DHO and head of Puskesmas</td>
<td>6</td>
<td>4</td>
<td>66.67</td>
</tr>
<tr>
<td>7</td>
<td>Advocacy for malaria control to the Bupati, DPRD, Bappeda, DP2KA, ka. District and other decision makers</td>
<td>5</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>8</td>
<td>Socialization of mosquito repellent plants and mosquito predators</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>The implementation of a healthy environment competition to commemorate World Malaria Day</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 7 shows that community participation in 2018 that met the target was the establishment of Kampung Malaria Post (Posmalkam) (185.71%) and malaria control advocacy to the Regent, DPRD, Bappeda, DP2KA and decision makers by 100%. Whereas those who did not reach the target were malaria counseling from and for the community (17.65%), vector eradication (Collaboration, closing mosquito breeding sites, cleaning gutters and standing water (50%), structuring healthy environment (66.67%), Training on Advocating Malaria control for DHO and Puskesmas heads (66.67%) While socialization of mosquito repellent plants and mosquito predators and the implementation of healthy environmental competitions to commemorate World Malaria Day, have not been implemented properly.

The results of interviews with ordinary informants show that the community participation program by forming village malaria interpreters in the PLA (Parsipatory learning of Action) by providing community participation learning with measures to control malaria by forming community groups. This shows that the PLA has been running well through the village malaria interpreter.

Table 8 shows that the Teluk Bintuni Regency government through the Health Office has planned and carried out activities in malaria control but that these activities have not all reached the target. The activities that were not realized were Entomological / Entomological Assistants and Outbreaks and Outbreaks (Training for Outbreaks of Malaria) which were not fully implemented), crosschecker training (33%) and those who succeeded in achieving the targets were training Malaria management Puskesmas including interpreters of malaria kampung (100%), providing Malaria protection and reporting recording format (100%), spraying houses and the environment (150%), meeting data validation (100%) and monitoring evaluation (100%) while the target achieved in other activities is cross check slides in stages (53.85%), screening and treatment of malaria in pregnant women, infants and toddlers (89%), monitoring and evaluation Implementation of a referral system for handling malaria in accordance with the protocol, management of malaria cases (66%), training for spraying training recording of malaria data reporting (81.82%)
h. Malaria Control (EDAT)

Table 8. Data on malaria control through strengthening management in the Malaria control program in 2018

<table>
<thead>
<tr>
<th>No</th>
<th>Program for Prevention and control of infectious diseases</th>
<th>Target</th>
<th>Realisation</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>There is the provision of Malaria protection and the Mass Blood Survey (MBS) reporting format, Mass Fever Survey (MFS)</td>
<td>19</td>
<td>19</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Spraying homes and the environment (larvaciding, including the use of bacillus thuringiensis)</td>
<td>8</td>
<td>12</td>
<td>150</td>
</tr>
<tr>
<td>3</td>
<td>Cross check slides in stages</td>
<td>15</td>
<td>7</td>
<td>53.85</td>
</tr>
<tr>
<td>4</td>
<td>Screening and treating malaria in pregnant women, infants and toddlers</td>
<td>19</td>
<td>17</td>
<td>89%</td>
</tr>
<tr>
<td>5</td>
<td>Monitoring and Evaluation (Implementation of a referral system for handling malaria in accordance with the protocol, management of malaria cases, etc.)</td>
<td>36</td>
<td>24</td>
<td>66%</td>
</tr>
<tr>
<td>6</td>
<td>Malaria case management training for doctors, paramedics (Midwives, nurses)</td>
<td>4</td>
<td>2</td>
<td>50%</td>
</tr>
<tr>
<td>7</td>
<td>Training of malaria program management staff for puskesmas including village malaria interpreters</td>
<td>24</td>
<td>24</td>
<td>100%</td>
</tr>
<tr>
<td>8</td>
<td>Microscopic and croschecker training for laboratory personnel</td>
<td>3</td>
<td>1</td>
<td>33.33</td>
</tr>
<tr>
<td>9</td>
<td>Training of entomological/entomological assistants</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>Training for spraying workers Training on recording malaria reporting</td>
<td>11</td>
<td>9</td>
<td>81.82</td>
</tr>
<tr>
<td>11</td>
<td>Data validation meeting</td>
<td>6</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>12</td>
<td>Surveillance entomologists</td>
<td>4</td>
<td>2</td>
<td>50%</td>
</tr>
<tr>
<td>13</td>
<td>Research on the results of the 2015-20178 malaria control program (included spleen rate survey)</td>
<td>2</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>14</td>
<td>Outbreaks and Outbreaks</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15</td>
<td>Monitoring and Evaluasi</td>
<td>4</td>
<td>4</td>
<td>100</td>
</tr>
</tbody>
</table>

4. DISCUSSION

4.1. Quality and quantity of distribution of malaria control health workers

The adequate number of health workers and the knowledge of health workers is the ability of health workers to understand, diagnose and provide the right dose of treatment for people with malaria. The indicators that were assessed were the ability of health workers to diagnose and provide treatment doses quickly and precisely and counseling patients to improve compliance with malaria patients. If health workers understand, diagnose and provide appropriate treatment doses of patients with malaria (Hamzah, 2008).

In accordance with Permenkes No. 370 of 2014 regarding the standard microscopic D-III analyst, this was also referred to by the Decree of the Regent No. 11 of 2010 that the level of education of microscopists and malaria-level personnel was at least D-III. From the decision that the quality and quantity of the distribution of health workers to control malaria has not reached the target until 2018, with a lot of energy shortages and of course the number of energy needs for 2020 is difficult to achieve according to the target.

The results of the study are in line with those conducted by Rahmawati (2012), that evaluating malaria elasticity in the city of NTT for aspects of personnel / staff management of malaria is still very minimal (2 people) even though the tasks and workload are quite large. In addition, Entomologists have not yet been in the puskesmas, even though Entomologist has an important role in efforts to break the chain of malaria transmission. Malaria eradication management staff consists of health workers and cadres who have participated in training at the level of Ternate City, North Maluku and regional provinces (Eastern Indonesia), then according to the parameters of evaluating the implementation of malaria eradication programs in Ternate City, the personnel / workforce aspects are assessed included in the bad category because the number of Ternate City DKK technical staff, Puskesmas, cadres and other agencies is not enough to implement a malaria eradication program, the number of personnel involved in malaria control cannot cover all target areas (not spread evenly) and all DKK City technical personnel Ternate, Puskesmas, cadres and other agencies are workers who do not have the appropriate educational background and all evaluate environmental management.

Attempts to achieve malaria elimination are many obstacles encountered in various places in the world such as in achieving malaria elimination in Ethiopia according to (Woyessa, 2013) a decrease in
malaria incidence observed in the past 3-4 years has not achieved the goal of malaria elimination due to individual awareness of environmental health risks reduce the occurrence of malaria infections. In Russia, technical problems occur in the final stages of the elimination program, namely difficulties in identifying patients and the absence of a very effective method for detecting malaria parasites and requiring the use of different treatment regimens and antimalarial drugs. Uncontrolled population migration is very important in the spread of infection in malaria-free areas. The urgent solution is to improve existing methods and develop new ones for infection detection and treatment and antimalarial policy packages.

In Indonesia the Government issued a Decree of the Minister of Health Number 293 of 2009 concerning Elimination of malaria in an effort to support the malaria elimination program. But as is the case in the Bintuni Bay District in an effort to achieve malaria elimination there are many obstacles that are encountered where there is a shortage of health workers and malaria experts. Lack of trained human resources and personnel is a major challenge to carry out malaria elimination planned for 2025.

Thus, the quality and quantity of the distribution of malaria control health workers in Bintuni Bay District has not been implemented properly and it is very likely that the target achievement cannot reach the target set by 2020.

4.2. Continuity of Logistics

The results showed that the sustainability of logistics in Bintuni Bay Regency was calculated in 2018 that the use of medicines and consumables was generally sufficient, with the most use of anti-malaria drugs being Arterakin (ACT) of 10,269 packages, except for those using injection artemethers who experienced stock vacancies. While tools and consumables are available. The vacancy is not constrained because it runs out in the allotted time, so that the logistical combination in Bintuni Bay Regency is adequate. This shows the seriousness of the Bintuni Bay Regency Government in eliminating malaria by strengthening health services in combating malaria.

The results of the study are different from Rahmawati (2012) in Ternate City. For logistics, it is still considered to be lacking, this is due to limited funds. Two-wheeled vehicles at the Ternate City Health Office are limited enough to hamper operational activities considering that two-wheeled vehicles are very useful for use in areas that are quite difficult to reach using four-wheeled vehicles. The absence of computers at the puskesmas makes staff use more personal laptops in malaria eradication work, so the aspects of facilities and infrastructure are considered included in the medium category because the facilities used in implementing the program consist of program operational vehicles, spraying vehicles, spraying machines, laboratory materials, insecticides and equipment needed for malaria eradication are available, insufficient and in good condition.

According to the Indonesian Ministry of Health (2011), the Ministry of Health serves logistics in the form of drugs, reagents, medical devices, insecticides. To support the quality of services, the logistics mechanism needs to be present. This matrix also considers the number and quality of personnel who will regulate the entry and exit of goods, maintain the quality of goods, and control the presence or absence of puskesmas / pustu / polindes areas that run out of drugs or other items. In addition to the power factor, it is also necessary to have a warehouse that is feasible and meets the requirements for storing goods consisting of 2 parts, namely the drug warehouse and insecticide warehouse.

Statement from the main informant (Iu1), that: the efforts made, namely planning logistics based on reports from service facilities, then we predict in what year will the use of logistics be increased by ten to twenty percent, and include buffer stocks that must be prepared by the service. This is also stated by supporting information
(IP1) that "efforts in the procurement of logistics that have been carried out, namely through timely and correct reports for tools and reagents, are still dependent on the health department to procure it" The Bintuni Bay Regency Government based on Regent Regulation No. 11 of 2010 has been well implemented, by improving health services in treating the community by providing adequate logistics.

4.3 Cross Sector Coordination

The results of the study found that cross-sectoral coordination in malaria eradication was done by collaborating with the Coordination Meeting on malaria control, a technical meeting on malaria control and a meeting to revise the malaria control plan held every 4 years. The purpose of the implementation is to examine the results of cross-sectoral cooperation activities and the arrangement of the next quarter work plan. Cross-sector specific objectives are discussions and are resolved jointly across sectors and the obstacles faced. New cross-sectoral work mechanisms / plans are formulated for future work plans (Bustami, 2011).

Cross-sector activities when linked to malaria elimination policies, activities are related to vector control efforts, environmental health management and health promotion. Malaria transmission can be minimized by controlling Anopheles Sp mosquitoes as malaria transmitting mosquitoes. Some vector control efforts that can be carried out in the malaria program are larvaciding (the controlling action of Anopheles larvae chemically using insecticides), biological controls (using larvaciding fish), environmental management and others. Control of adult mosquitoes is done by spraying the walls of the house with insecticides (IRS / Indoors Residual Spraying) or using an insecticide-treated mosquito net. But it needs to be emphasized that vector control needs to be REESAA (rational, effective, efficient, sustainable, affective and affordable) given Indonesia's vast geographical conditions and diverse bionomic vectors so that mapping of breeding places and mosquito behavior is very important (Pusdatin Kemenkes RI, 2011). For this reason, the role of the government, all stakeholders and the community is needed in controlling malaria vectors.

The results of this study were not different from those of Roosilehtiamo and Rukmini (2012) regarding malaria elimination policies in Bali Province, that cross-sectoral coordination was still lacking, even the cross-sectoral coordinators did not know the malaria elimination policy from the Governor of Bali. Cross-sectoral coordination in Teluk Bintuni Regency from informant interviews (Iu4), that "cross-sectors are still needed by comrades from other sectors to also participate in coordinating efforts to control malaria". This shows that cross-sector coordination in Bintuni Bay District shows a lack of commitment from policy makers in the Bintuni Bay Regency. This is also supported by the statement of all supporting informants that: Cross-Program coordination is carried out by Malaria Integration activities, both immunization and MCH, namely for KIA Skring Malaria activities for pregnant women and distribution of bed nets and for immunization for providing mosquito nets for those who finish measles immunization, across sectors do PLA activities.

4.4. Community Participation

The results showed that community participation in 2018 that met the target was the establishment of Kampung Malaria Post (Posmalkam) (185.71%) and malaria control advocacy to the Regent, DPRD, Bappeda, DP2KA and 100% decision makers. Whereas those who did not reach the target were malaria counseling from and for the community (17.65%), vector eradication (Collaboration, closing mosquito breeding sites, cleaning gutters and standing water (50%), structuring healthy environment (66.67%), Training on Advocating Malaria control for DHO and Puskesmas heads (66.67%) While socialization of mosquito repellent plants and mosquito predators and...
the implementation of healthy environmental competitions to commemorate World Malaria Day, have not been implemented properly.

The results of the Lestasri study (2012), before the Malaria Center was formed, the health office in North Maluku Province carried out health promotion efforts including advocacy, partnership, and community empowerment. Community empowerment uses a Participatory Learning and Action approach that involves active community participation in an effort to increase public awareness to be able to recognize environmental conditions such as enabling conditions for mosquito breeding sites, recognize the symptoms of malaria infection, and recognize malaria prevention and control efforts. However, community empowerment efforts have not gone well, especially awareness of environmental cleanliness that is still lacking. Though transmission of malaria involves the Anopheles mosquito vector so that vector eradication needs to be done. So far, the implementation of malaria control efforts has focused more on human medicine, while the vector eradication approach is rarely done.

Community participation is very much needed in malaria control programs in Indonesia. In Indonesia there are various kinds of ethnic groups with various influential habits in supporting community participation in malaria control programs. Several studies conducted in Central Java, West Java, NTB, Papua (Timika), show that some behaviors that do not support malaria control efforts are the habits of people who seek self-medication by buying drugs at the nearest shop and using drugs at inappropriate doses, habits be out of the house or have nighttime activities without protection from mosquito bites and the logging of mangroves by the community which will cause new breeding grounds for malaria vectors (Ferdinand, 2011). Community participation is low because there is a lack of socialization that invites community participation independently with the formation of malaria groups. Community participation aims to enable the community to protect themselves and their families by actively eradicating anopheles mosquitoes.

4.5. Malaria Control through the EDAT program

The Bintuni Bay District Government through the Health Office has planned and carried out activities in malaria control but these activities have not all reached the target, while the activities that were not realized at all were training entomologists / Entomological Assistants and Outbreaks and Outbreaks (Outbreaks of 2015-2018 Malaria), training of Puskesmas Malaria management staff and village malaria interpreters (100%) and croschecker training (33%), reporting recording format (100%), house and environment spraying (150%), data validation meetings (100%) and Monitoring evaluation (100%) while the target achieved in other activities is Cross check slides in stages (53.85%), screening and malaria treatment for pregnant women, infants and toddlers (89%), Monitoring and Evaluation Implementation of referral treatment systems for severe malaria according protocol, management of malaria cases (66%), training for spraying staff Training in recording data reporting malaria (81.82%)

The Bintuni Bay Regency Malaria Control Program Plan for 2010-2020 is prepared in line with the Strategic Plan of the Bintuni Bay District Health Office for 2010-2020. The Strategic Plan for the Bintuni Bay District Health Office for 2010-2020 is the elaboration of Vision-Mission, Development Policy and Strategy in the health sector, which is based on the Ministry of Health's Strategic Plan and the Bintuni Bay Regency RPJM / Strategic Plan for 2010-2020. The implementation of the Bintuni Bay malaria control program plan is outlined in the Annual Work Plan for the Malaria Control Program in Bintuni Bay Regency in the form of technical instructions or fixed procedures and an increase in human resources through
training for microscopic, cross-sectoral and entomological surveillance personnel. The malaria control program has not been implemented properly, specifically training entomologists / entomological assistants and overcoming outbreaks and outbreaks.

In addition, a village defense program was established in the Early Diagnostic And treatment (EDAT) program, which is a system of cooperation between local governments, non-governmental and private organizations to establish village malaria interpreters (JMK) or malaria specialists in remote areas who have difficult access to health care facilities. The village malaria interpreter is not a medical staff, but the people chosen to raise awareness and education of the community so that they are able to identify, prevent and treat malaria, namely the village clerk is trained skillfully in taking blood for examination and coloring for examination which will then be taken to the service health for inspection by crosschecker personnel.

To repeat the same success, the West Papua Health Office has also recently created a program called Bela Kampung which is a program that aims to free the village from malaria within two months and so on, from village to village, gradually, thoroughly and sustainably. Bela Kampung is deliberately taken from the learning of the success of EDAT in Bintuni Bay, so that it is expected to be easy to run in all districts.

Bela Kampung also involved the community directly in the village together with officers taking blood or checking blood. There are malaria cadres who have the same duty, namely to be trained to examine blood, educate and make people aware of the importance of malaria prevention and treatment to completion. After being examined, for example positive malaria, there are health workers who give the drug completely. Besides the village malaria interpreter besides socializing 3M (closing, draining and stockpiling), the malaria cadres are also tasked with monitoring the mosquito nets that have been distributed by the government.

4.6. Consistency of Government Policy

The consistency of government policies in eliminating malaria due to adequate operational costs. Government consistency is seen by financing the malaria budget. Health financing in Teluk Bintuni Regency in 2015-2018 originated from the district budget funds and the Ministry of Health Fund and other sources of funds from UNICEF, used for health costs, eradication and use of malaria. From the budgeting provided by the Bintuni Bay Regency Government specifically for malaria. Health financing for 2015-2018 comes from the district budget funds and the Ministry of Health funds and other funding sources, namely from UNICEF, used for health costs, eradication and use of malaria. The results of the research conducted by Roosiermiatie and Rukmini (2012) in Bali Province said that funding with a reduction in the budget would increase the reduction of malaria program in the field, especially preventive and promotive efforts. Regarding the Global Malaria Program, malaria is a disease that must continue to be carried out, monitoring and evaluation as well as the formulation of appropriate policies and strategies. Because of the importance of controlling malaria, some international, one of which is the Global Fund, provides assistance for malaria control in Indonesia (Pusdatin Ministry of Health RI, 2011).

This is in line with the statement of Iu3 "the consistency of the government in budgeting if needed in the budget plan (Renstra) has not been fulfilled, but every year the funds for malaria are still in accordance with the financing plan for fairly large mosquito nets and spraying ...Health costs from the point of view of service providers are providers of funds that must be provided for health assistance. With the understanding that this raises health costs from the point of view of service providers, most of the government and the private sector, the parties who will carry out health efforts (Aswar, 2010).
The main requirements of health care costs must be available in sufficient quantities in the sense that they can finance the implementation of all the necessary health efforts and not make it difficult for the people who want to use them. Another requirement that must be fulfilled is the distribution of funds that must be in accordance with needs. If the available funds cannot be allocated properly, it will make it difficult to carry out any health efforts. Utilization of funds, because if the amount and distribution of funds are good, but if the implementation does not get a thorough arrangement, more problems will arise, which if sustainable will make it difficult for people who need health services (Aswar, 2010). The consistency of the Bintuni Bay Regency government in order to eliminate malaria based on Regent Regulation No. 11 of 2010 showed seriousness in eradicating malaria.

5. CONCLUSIONS
Based on the results and discussion, it is concluded as follows
1. The quality and quantity of distribution of malaria control health workers has been carried out well with the presence of microscopic energy and energy
2. The sustainability of malaria logistics in Bintuni Bay Regency is adequate
3. Cross-sector coordination in the identification of malaria has been well implemented
4. Community participation in malaria control is quite good
5. Malaria control has been carried out well through the EDAT program in the formation of village malaria interpreters in taking blood for examination and getting malaria treatment.
6. Consistent policy of the government of Bintuni Bay District is very supportive in eliminating malaria.

REFERENCES
- Linggar F, Rantetampang AL, Tingginehe R et.al. The factors influencing defeacion

Marthen A. L Ayatanoi, 2013. Evaluasi Program Pengendalian dan Pemberantasan Malaria di Puskesmas Harapan Distrik Sentani Timur Kabupaten Jayapura


Notoadmodjo, 2012, Metode Penelitian Kesehatan, Rineka Cipta Jakarta


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The Determinant Factors Influencing Immunization Clinics- There Is Nothing in Mr. Prafi Regency Manokwari

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ABSTRACT
Immunization against measles and Rubella Immunization, better known as Measles Rubella (MR), the year 2017 is nothing 82.1% of measles Immunization, Measles Immunization is nothing 2018 Year January to December 2018 20.8% province of West Papua, Advanced 13.4%, Measles 27%, very low nationwide. Measles Immunization Clinics close to Prafi in January to October 2018 72% and measles Advanced 0% of the 370 Babies in the workplace Puskemas Prafi Regency Manokwari. The purpose of the research: to find out the factor of determinants that affect immunization Clinics there is nothing in MR. Prafi Regency Manokwari. Research methods: Analytic observational study design with cross sectional. The research was carried out on 11 September to 30 October 2018 in Clinics with population of Prafi children aged 9 months s/d 15 years as much as the Child should be at 4,525 Immunization MR. and the number of respondents as much as 98 Children in purposive sampling. Data obtained using questionnaires and analyzed using Chi Square test with a significant α gained 0.005 < that significant socio-cultural (0.102), education (0.563), knowledge (0.963), income (0.398), attitude (0.856), family support (0.166), jobs (0.000), affordability to the place of service (0.831) and social media (0.904). That affect immunization is nothing MR. is job in determining Close Immunization Clinics in the Prafi District of MR. Manokwari.

Keywords: Immunization Clinics, Job, MR. Prafi, In The District Of Manokwari

1. INTRODUCTION
From the results of previous studies, there were some researchers who said there was a relationship between knowledge, education, attitude, and immunization (Tri Aulia Rahayu, 2017). Referring to RI Minister of Health Regulation No.1501 of 2010 concerning certain types of infectious diseases that can cause epidemics, Article 4 paragraph 1 contains 17 types of diseases & Article 2 mentions certain other infectious diseases that can cause epidemics. (Permenkes RI, 2010).

Indonesia has committed to achieving elimination of measles and rubella control / Congenital Rubella Syndrome (CRS) in 2020. Based on the results of surveillance and immunization coverage, routine measles immunization is not enough to achieve the measles elimination target. Whereas for rubella / CRS control acceleration, additional immunization campaigns need to be carried out before the introduction of the MR vaccine into routine immunization. For this reason, a MR vaccine immunization campaign is required for children aged 9 months to <15 years.

The MR immunization campaign activity will be carried out in two phases, namely phase I in August - September 2017 throughout Java and phase II in August-September 2018 throughout Sumatra, Kalimantan, Sulawesi, Nusa Tenggara, Maluku and Papua. (Indonesian Ministry of Health, 2017). The incidence of CRS in regions that have introduced the rubella
vaccine during 1996-2008 has decreased. In Indonesia, rubella is a public health problem that requires effective prevention. Surveillance data over the past five years shows that 70% of cases of rubella occur in the age group <15 years. In addition, based on a study of the estimated disease burden of CRS in Indonesia in 2013 it was estimated that there were 2767 cases of CRS, 82 / 100,000 occurred at the age of mothers 15-19 years and decreased to 47 / 100,000 at the age of 40-44 years. (Indonesian Ministry of Health, 2017). While the Modeling calculation in East Java is estimated at 700 babies born with CRS every year. (Indonesian Ministry of Health, 2017)

In the Global Vaccine Action Plan (GVAP), measles and rubella are targeted to be eliminated in the 5 WHO regions by 2020. In line with the 2012-2020 GVAP, The Global Measles & Rubella Strategic Plan maps out the strategies needed to reach the world target without measles, rubella or CRS. One of the five strategies is achieving and maintaining a high level of community immunity by giving two doses of vaccines containing measles and rubella through routine and additional immunizations with high coverage (> 95%) and evenly distributed.

Based on surveillance data and immunization coverage, routine measles immunization is not enough to achieve measles elimination targets. Whereas for rubella / CRS control acceleration, additional immunization campaigns need to be carried out before the introduction of the MR vaccine into routine immunization. For this reason, a campaign for the provision of MR immunization is needed for children aged 9 months to <15 years. Provision of MR immunization at the age of 9 months to <15 years with high coverage (minimum 95%) and evenly expected to form group immunity (Herd Immunity), so as to reduce the transmission of the virus to a more mature age and protect the group when entering reproductive age (Indonesian Ministry of Health, 2017).

An immunization program is a health service program that must be provided and administered by the government. The mandatory term arises because an immunization program is a service that has a low domain and has a large impact on others (externality). Thus, availability means that the government must provide sufficient and reliable personnel in conducting, immunizing, adequate equipment in accordance with technical standards, sufficient funds (investment, operations, and maintenance), and adequate vaccines. (Muhlil R, 2005). The latest UNICEF report stated that 27 million infants and 40 million pregnant women worldwide still did not receive routine immunization services. As a result, the disease that can be prevented by this vaccine is estimated to cause more than two million deaths each year. This figure includes 1.4 million babies who were taken away by their lives (UNICEF, 2000).

Immunization must be given many times with a certain period of time, parents often forget and must record in child health documents that are usually given by midwives, either in the practice or in the hospital. If parents are careless, health documents might be tucked away (Ministry of Health, 2005). The success of immunization programs in Indonesia is influenced by several factors, including, maternal age, maternal education level, maternal employment status, level of maternal knowledge and birth order of children. Rubella Measles Immunization which is better known as MR Phase II Immunization in 7 Provinces namely Sumatra, Kalimantan, Sulawesi, Nusa Tenggara, Maluku, Papua and West Papua. MR Immunization in West Papua starts on August 1 to September 30, 2018.

West Papua carried out MR immunization in 12 districts and 1 city, namely Tambrauw Regency, Raja Ampat Regency, Wondama Bay Regency, Bintuni Bay Regency, Fak-Fak Regency, Sorong Regency, South Sorong Regency, South Manokwari Regency, Maybrat Regency,
Manokwari Regency, Manokwari Regency, Kota Sorong, Arfak Mountains Regency, and Kaimana Regency. Since the beginning of the implementation of MR immunization there were many obstacles so that the implementation of MR Immunization could not run as planned. Since August 1, 2018, the rejection of MR immunization has been evenly distributed in Manokwari Regency. Based on the description above, the researcher was interested in taking the title "Determinant Factors Affecting Measles Rubella Immunization in Prafi Health Center, Manokwari Regency in 2018"

2. MATERIALS AND METHODS

2.1 Type and Design of Research
This study is an observational analytic study which aims to determine the effect of two or more variables (Sogiyono, 2013). This study explains the relationship affects and is influenced by variables - variables to be studied. Using the Cross Sectional approach with data collection done simultaneously at one time (Sugiyono, 2013).

2.2 Place and Time of Research
Location is where the research is conducted, while time is the period of time needed by researchers to obtain data (Notoatmodjo S, 2012)

2.3 Place and Time
The place for conducting the research was conducted at the Prafi Health Center in Manokwari Regency. This research was conducted on September 11 to October 30, 2018.

2.4 Population and Samples
1. Population
Population is the overall research subject (Arikunto, 2010). The population in this study were 9 months to 15 years old children as many as 4,525 MR children immunized.

2. Sample
According to (Notoatmodjo S, 2012) sample is a portion of the population that is considered representative. The sample size is obtained by the following formula:

\[ n = \frac{N}{1 + N (d)^2} \]

Where:
- \( n \) : sample size
- \( N \) : population
- \( d \) : Deviations by population by the degree of health used, i.e. 0,1

Sampling is done by Purposive Sampling, which is a sample taken based on certain considerations with the following criteria:

a. Inclusion criteria
The inclusion criteria were the criteria for the sample that met the requirements to be used as samples, namely 1) Mothers who were willing to be respondents, 2) children aged 9 months - 15 years by random sampling, 3) Mothers who lived in the Prafi Health Center area.

b. Exclusion criteria
Exclusion criteria are criteria for samples that meet the requirements to be sampled, such as 1) Children who are not present during MR immunization, 2) Mothers who are not willing to be respondents, 3) Children who are sick, 4) Mothers who cannot read and write.

3. RESULTS

3.1 Bivariate Analysis

<table>
<thead>
<tr>
<th>Socio-cultural</th>
<th>Acceptance</th>
<th>No accept</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>17</td>
<td>11</td>
<td>28</td>
</tr>
<tr>
<td>MR Immunization</td>
<td>60,7%</td>
<td>39,3%</td>
<td>100%</td>
</tr>
<tr>
<td>Number</td>
<td>28</td>
<td>40</td>
<td>68</td>
</tr>
<tr>
<td>MR Immunization</td>
<td>40%</td>
<td>60%</td>
<td>100%</td>
</tr>
<tr>
<td>Total Number</td>
<td>45</td>
<td>45,9%</td>
<td>53</td>
</tr>
<tr>
<td>MR Immunization</td>
<td>45,9%</td>
<td>54,1%</td>
<td>98%</td>
</tr>
<tr>
<td>P-Value = 0,102; RP = 1.518; CI 98% (1.004-2.295)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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In table 1, shows that of the socio-cultural variables that received MR immunization as many as 17 people (60.7%) and those who did not receive MR immunization as many as 28 people (40%). The results of the chi square statistical test at a meaningful value of 98% (α = 0.05) were obtained p-value 0.102 or P> α (0.05). This means that there is no socio-cultural relationship with MR immunization at the Prafi Health Center in Manokwari District. The results of the chi square statistical test at a meaningful value of 98% (α = 0.05) were obtained p-value 0.102 or P> α (0.05). This means that there is no socio-cultural relationship with MR immunization at the Prafi Health Center in Manokwari District. The results of the chi square statistical test at a meaningful value of 98% (α = 0.05) were obtained p-value 0.102 or P> α (0.05). This means that there is no socio-cultural relationship with MR immunization at the Prafi Health Center in Manokwari District. The results of the value of RP = 0.910; CI98% (1,004-2,295) more than 1, so social culture is not a risk factor with MR immunization.

b. Relationship between Education and MR Immunization

Table 2. Relationship between Education and MR immunization in the Community Health Center Prafi Manokwari District in 2018

<table>
<thead>
<tr>
<th>MR Immunization</th>
<th>Yes</th>
<th>%</th>
<th>No</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High &gt; SMA</td>
<td>28</td>
<td>43.1</td>
<td>37</td>
<td>56.9</td>
<td>65</td>
<td>100</td>
</tr>
<tr>
<td>Low &lt; SMA</td>
<td>17</td>
<td>51.5</td>
<td>16</td>
<td>48.5</td>
<td>33</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>45.9</td>
<td>53</td>
<td>54.1</td>
<td>98</td>
<td>100</td>
</tr>
</tbody>
</table>

P-Value = 0.334; PR = 0.836; CI 98% (0.542-1.290)

Table 2 shows that of 28 people (43.1%) who were highly educated there were 37 people (56.9%) who did not want their children to be immunized by MR. Whereas from 17 people (51.5%) respondents who had low education there were 16 people (48.5%) who did not want their children to be immunized by MR.

The results of the chi square statistical test at a meaningful value of 98% (α = 0.05) were obtained p-value 0.719 or P> α (0.05). This means there is no relationship between education and MR immunization at the Prafi Community Health Center in Manokwari Regency. Test Results Prevalence ratio (RP) = 0.836; CI98% (0.542-1,290) indicates that education is not a risk factor for MR immunization.

c. Relationship between Knowledge and MR Immunization at the Prafi Health Center in Manokwari District

Table 3. Relationship of Knowledge with MR immunization in the Prafi Health Center in Manokwari District in 2018

<table>
<thead>
<tr>
<th>MR Immunization</th>
<th>Yes</th>
<th>%</th>
<th>No</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Know</td>
<td>32</td>
<td>45.1</td>
<td>39</td>
<td>54.9</td>
<td>71</td>
<td>100</td>
</tr>
<tr>
<td>Not</td>
<td>13</td>
<td>48.1</td>
<td>14</td>
<td>51.9</td>
<td>27</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>45.9</td>
<td>53</td>
<td>54.1</td>
<td>98</td>
<td>100</td>
</tr>
</tbody>
</table>

P-Value = 0.963; PR = 0.936; CI 98% (0.586-1.495)

Table 3 shows that respondents' knowledge about MR immunization was 32 people (45.1%) and those who did not have knowledge about MR immunization were 13 people (48.1%). The results of the chi square statistical test at a meaningful value of 98% (α = 0.05) were obtained p-value 0.963 or P> α (0.05). This means that there is no significant relationship between knowledge and MR immunization in the Prafi Community Health Center, Manokwari Regency. Prevalence ratio test results (RP) = 0.936; CI98% (0.586-1,495) more than 1, so knowledge is not a risk factor for MR immunization.

d. Relationship between Family Income and MR Immunization

Table 4. Relationship between Family Income and MR Immunization at the Prafi Community Health Center in Manokwari District, 2018

<table>
<thead>
<tr>
<th>MR Immunization</th>
<th>Yes</th>
<th>%</th>
<th>No</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>26</td>
<td>51</td>
<td>25</td>
<td>49</td>
<td>51</td>
<td>100</td>
</tr>
<tr>
<td>Low</td>
<td>19</td>
<td>40.4</td>
<td>28</td>
<td>59.6</td>
<td>47</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>45.9</td>
<td>53</td>
<td>54.1</td>
<td>98</td>
<td>100</td>
</tr>
</tbody>
</table>

P-Value = 0.398; PR = 1.261; CI 98% (0.813-1.956)

Table 4 shows that of 26 people (51%) who were high income there were 25 people (49%) who did not want their children to be immunized by MR. Whereas from 19 people (40.4%) respondents who had low income there were 28 people (59.6%) who did not want their children to be immunized by MR.

The results of the chi square statistical test at a meaningful value of 98% (α = 0.05) were obtained p-value 0.398 or P> α (0.05). This means that there is no relationship between family income and MR immunization at the Prafi Community Health Center in Manokwari District.
Table 4 shows that high family income is 26 people (51%), there are 25 people (49%) who want to be immunized by MR. And as many as 19 people (40.4%) whose family income is low and not immunized as many as 28 people (59.6%). The results of the Chi Square statistical test at a meaningful value of 98% ($\alpha = 0.05$) were obtained $p$-value 0.398 or $P > \alpha (0.05)$. This means that there is no relationship between family income and MR immunization at the Prafi Community Health Center in Manokwari Regency. Prevalence ratio test results (RP) = 1.261; CI98% (0813-1.956) more than 1, so that family income is not significant with MR immunization.

**e. Relationship between Attitudes and MR Immunization**

Table 5 shows the attitude of the respondents 17 people (48.6) who want to receive MR immunization and 28 people (44.4%) who refuse to be immunized with 18 people not accepting MR immunization (51.4%), while the attitude that refused and did not want MR immunization was 35 people (55.6%). The results of the Chi Square statistical test at a meaningful value of 98% ($\alpha = 0.05$) were obtained $p$-value 0.856 or $P > \alpha (0.05)$. This means that there is no relationship between attitude and MR immunization at the Prafi Community Health Center in Manokwari Regency. Prevalence ratio ($RP$) = 1.093; CI98% (0.705-1.695) more than 1, so attitude is not a risk factor for MR immunization.

**f. Relationship between Family Support and MR Immunization**

Table 6 shows family support for MR immunization as many as 45 people (45.9%) with those who are willing to get MR immunization as many as 37 people (82%) and those who are not willing to get MR immunization as many as 37 people (50.7%) while without support family but were willing to get MR immunization as many as 37 people (50.7%) and those without family support were still unwilling to immunize MR 36 people (49.3%). The results of the chi square statistical test at a meaningful value of 98% ($\alpha = 0.05$) were obtained $p$-value 0.166 or $P > \alpha (0.05)$. This means that there is no relationship between family support and MR immunization at the Prafi Community Health Center in Manokwari Regency. Prevalence ratio test results (RP) = 0.631; 98% CI (0.341-1.167).

**g. Employment Relations and MR Immunization**

Table 7 shows the relationship of MR immunization with working individuals and non-working individuals. The results of the chi square statistical test at a meaningful value of 98% ($\alpha = 0.05$) were obtained $p$-value 0.000 or $P > \alpha (0.05)$. This means that there is no relationship between the type of occupation and MR immunization at the Prafi Community Health Center in Manokwari Regency. Prevalence ratio test results (RP) = 3.057; 98% CI (1.599-5.847).
Table 7 shows the number of respondents working and their children immunized as many as 37 people (62.7%) and those not immunized by 22 people (37.3%) with respondents who did not work and immunized as many as 8 people (20.5%). The results of the chi square statistical test at a significant value of 98% ($\alpha = 0.05$) were obtained p-value 0.000 or $P < \alpha$ (0.05). This means there is a relationship between work with MR immunization at the Prafi Community Health Center in Manokwari Regency. Prevalence ratio (RP) = 3.057; 98% CI (1,599-5,847), so work is a risk factor for MR immunization.

**h. Relationship to Affordability to the place of service and MR Immunization**

<table>
<thead>
<tr>
<th>MR Immunization</th>
<th>Yes %</th>
<th>No %</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affordability to the service location</td>
<td>Far Number 27</td>
<td>44.3</td>
<td>34</td>
</tr>
<tr>
<td>Nes Number 18</td>
<td>48.6</td>
<td>19</td>
<td>51.4</td>
</tr>
<tr>
<td>Total Number 45</td>
<td>45.9</td>
<td>53</td>
<td>54.1</td>
</tr>
</tbody>
</table>

$P$-Value = 0.831; PR = 0.910; CI 98% (0.589-1.405)

Table 8 shows the affordability of services to the provision of far-reaching immunizations as many as 27 people (44.3%) and those not immunized as many as 34 people (55.7%), affordability to services that are close and unwilling in MR immunization as much as 19 people (51.4%) and those who had been immunized by MR were 18 people (48.6%). The results of the chi square statistical test at a meaningful value of 98% ($\alpha = 0.05$) were obtained p-value 0.831 or $P > \alpha$ (0.05). This means that there is no relationship between Affordability to the service location and MR immunization at the Prafi Community Health Center, Manokwari Regency. Prevalence ratio test results (RP) = 0.910; 98% CI (0.589-1.405).

**i. Relationship of Information Media with MR Immunization**

<table>
<thead>
<tr>
<th>MR Immunization</th>
<th>Yes %</th>
<th>No %</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information media</td>
<td>Know Number 32</td>
<td>47.1</td>
<td>36</td>
</tr>
<tr>
<td>Not Number 13</td>
<td>43.3</td>
<td>17</td>
<td>56.7</td>
</tr>
<tr>
<td>Total Number 45</td>
<td>45.9</td>
<td>53</td>
<td>54.1</td>
</tr>
</tbody>
</table>

$P$-Value = 0.904; PR = 1.086; CI 98% (0.672-1.756)

Table 9 shows that there was no relationship between information media on MR immunization as many as 45 people (45.9%) knew about MR immunization but were not in MR immunization, and who did not know information about MR immunization but wanted to be MR immunized as many as 53 people (54.1%). The results of the chi square statistical test at a meaningful value of 98% ($\alpha = 0.05$) were obtained p-value 0.904 or $P > \alpha$ (0.05). This means that there is no relationship between media information and MR immunization at the Prafi Community Health Center in Manokwari Regency. Prevalence ratio (RP) = 1.086; 98% CI (0.672-1.756). However, information media as a protective factor with the implementation of MR immunization.

### 3.2 Multivariate Analysis

Multivariate analysis was used to obtain answers to which factors had an effect on MR immunization, so bivariate analysis was needed, followed by multivariate tests. Bivariate modelling using the chi square test was seen from $p < 0.25$ can be seen in table.18.
Table 10: Bivariate Modeling

<table>
<thead>
<tr>
<th>No</th>
<th>Variables</th>
<th>p-value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Social-culture</td>
<td>0.102</td>
<td>Not candidate</td>
</tr>
<tr>
<td>2</td>
<td>Education</td>
<td>0.563</td>
<td>Not candidate</td>
</tr>
<tr>
<td>3</td>
<td>Knowledge</td>
<td>0.963</td>
<td>Not candidate</td>
</tr>
<tr>
<td>4</td>
<td>Family income</td>
<td>0.398</td>
<td>Not candidate</td>
</tr>
<tr>
<td>5</td>
<td>Attitude</td>
<td>0.856</td>
<td>Not candidate</td>
</tr>
<tr>
<td>6</td>
<td>Family support</td>
<td>0.166</td>
<td>Not candidate</td>
</tr>
<tr>
<td>7</td>
<td>Occupation</td>
<td>0.000</td>
<td>Candidate</td>
</tr>
<tr>
<td>8</td>
<td>Distance</td>
<td>0.831</td>
<td>Not candidate</td>
</tr>
<tr>
<td>9</td>
<td>Information media</td>
<td>0.904</td>
<td>Not candidate</td>
</tr>
</tbody>
</table>

In the table 10 indicates that the variable entered as a candidate to be tested together or multivariate is a variable of employment. Test using logistical binary regression. Based on table 17 bivariate modelling, there is only one candidate variable, namely education. So it doesn't use multivariate tests.

4. DISCUSSION

4.1 Relationship between Socio-Culture and MR Immunization

The results showed that there was no relationship between socio-culture and MR immunization. Can be seen socio-cultural variables in MR immunization as many as 45 people (45.9%) and those not in MR immunization as many as 53 people (54.1%). It can be concluded that there are still many who have views in terms of beliefs, customs, and traditions not to be immunized by MR. Consideration because the MR vaccine is not halal. This socio-culture is protective of MR immunization. The active role of the government, cross-sectors, religious leaders, community leaders, agencies related to regional work units and health workers to be active in implementing MR immunization, especially in providing understanding of the importance of MR immunization.

4.2 Relationship of Education with MR Immunization

The results showed that there was no relationship between education and MR immunization. It was seen from 98 people (100%) who were highly educated there were 28 people (43.1%) who wanted their children to be immunized against MR, while 37 (56.9%) people those with low education are not immunized by MR. It can be concluded that overall higher education and low education in MR immunization were 45 people (45.9%) and 53 people (54.1%) people whose children were not immunized by MR. This education is protective of MR immunization because most of them are highly educated in Senior High School and Higher Education but are highly educated, not always able to change one's perspective on MR immunization. Education is not only at school but the child's first education is at home or in the surrounding environment. All fields of education and health must play an active role in providing education about health and the importance of immunization especially early childhood immunization to children.

4.3 Relationship between Knowledge and MR Immunization

The results showed that there was a relationship between knowledge and MR immunization. Table 11 can be seen as many as 32 people (45.1%) who had knowledge about MR immunization and 13 people (48.1%) who did not have knowledge about MR immunization. Knowledge continues to grow and is very influential in the implementation of MR immunization, since the implementation of MR immunization is a lot of repelling due to knowledge about the obscurity of non-halal MR vaccines. All efforts have been made such as socialization, counseling and education so that the understanding and knowledge that develops is not in line with reality. The role of health workers, the government, cross-sectors, religious leaders, community leaders and community institutions to play an active role in dealing with a problem and resolving problems with health goals for all children of the nation.

4.4 Relationship between Family Income and MR Immunization

The results showed that of 51 people had high income and 47 people had low income. Those who were willing to be immunized by MR 45 people (45.9%) and those who were not MR immunized 53 people (54.1%) indirectly rejecting MR immunization were greater than those who
were willing to be immunized MR High and low income did not affect MR immunization, because most of the population in the Prafi Community Health Center area of Manokwari Regency are farming, gardening and entrepreneurship.

4.5 Relationship between Family Support and MR Immunization

The results showed family support for immunization as many as 8 people (32%) and those without supporting the family as many as 17 people (68%), while without family support as many as 37 people (50.7%) with those who support families get as many as 36 MR immunizations people (49.3%). It can be concluded that family support plays a role in MR immunization, without family support, MR immunization cannot be carried out. So, family support is a protective factor with MR immunization. Family support greatly influences MR immunization outcomes, without family support, MR immunization cannot run in accordance with the national target of 95%. All returned to the certification of halal MR vaccines, so that many families forbid children, grandchildren, relatives to be MR immunized, so that all government, private and community parties (cross-sectors) must be involved in the implementation of MR immunization. MR immunization is a new immunization and is a combination of measles and rubella immunization vaccine. So that the family needs more understanding of the way the cycle of making, distributing and using MR vaccines to children aged 9 months to 15 years.

4.6. Employment Relations with MR Immunization

The results showed that MR immunization was given to respondents who worked as many as 37 people (62.7%) with those not in MR immunization as many as 22 people (37.3%), while those who did not work and in MR immunization were 8 people (20.5 %) with those who were not in MR immunization as many as 31 people (79.5%). Based on existing data, it is clear that work is very influential on the implementation of MR immunization. The work of someone who has a high position or position does not have the time to take the child to an immunization service to either the government or private health service center because it is busy with work and responsibilities in the office. Work also affects ordinary people because they require responsibility and work so they don't pay attention to immunization and children's health. So that it can be concluded whatever the work of a person or respondent greatly influences the implementation of MR immunization.

4.7 Relationship to Affordability to Service Sites with MR Immunization

The results showed that affordability to remote MR immunization service sites was 27 people (44.3%) with 34 people not immunized (55.7%), affordability to close service places as many as 18 people (48.6%). ) those who were MR immunized and those who were not immunized were 19 people (51.4%). The distance between living quarters and the location of MR immunization services does not interfere with the implementation of MR immunization. Because distance does not affect respondents to bring children aged 9 months to 15 years to government and private health service centers to get MR immunization.

4.8 Relationship to Information Media with MR Immunization

The results showed that the information media was very instrumental in the implementation of 32 immunizations of MR (47.1%) who used information media to determine MR immunization and as many as 13 (43.3%) who did not use media information about MR immunization. Modern times greatly influence one's attitudes, views, education and knowledge. With the spread of information about the inadequacy of the MR vaccine, the side effects after injection of the MR vaccine even cause death after MR immunization; there is a prohibition against MR immunization causing the number of rejects against immunization. Conclusion there is
no relationship between information media and MR immunization.

Measles and Rubella immunization or Measles Rubella (MR) is a new immunization carried out in Manokwari Regency. The implementation of MR immunization is carried out on August 1 to September 31, 2018 with the target number of children aged 9 months to 15 years is 4,525 with a national target of 95%.

As a result of the rejection and rampant information from the mass media and electronics about halal vaccines, the effects arising from Mr immunization and deaths due to MR immunization. Respondents preferred not to give MR immunization to their children due to fear that their hot children could not work.

MR immunization is influenced by social culture, education, knowledge, income, family support, employment, affordability to service places, and information media. But it does not have a significant relationship. It is very difficult to be able to change the attitude that already exists, so it needs various ways to be able to change that attitude. So that the achievement of MR immunization can be achieved.

The implementation of MR immunization is carried out simultaneously from August to September 2018. The Prafi Health Center with a target number of children aged 9 months to 15 years is 4,525 with a national target of 95%. As a result of rejecting and increasing information from mass and electronic media about vaccine halalness, the effects of Mr. immunization and deaths from MR immunization. Respondents preferred not to give MR immunization to their children due to fear that their hot children could not work.

Respondents did not bring their children immunization service posts because there was no transportation, respondents preferred to work to earn income. So that on September 31, 2018 Children aged 9 months to 15 years who received MR immunization at the Prafi Health Center from August to September were 3,428 children (75.8%). So that there was an increase in the number of children injected by October 3,995 children (88.3%) the Prafi Health Center still could not reach the target. Due to the rejection and fear of parents, as well as families who forbid MR immunization, the government has extended the period of MR immunization until December 2018. All efforts have been made by issuing the Regent's Instruction in September 2018 mandatory MR immunization by involving all existing sectors, Fatma MUI no 33. Year 2018 concerning Mubah and Mandatory MR Immunization, Cross-Sector MR Socialization October 18 2018 (Central Government, West Papua Provincial Government, Manokwari District Government, Central Indonesian Ulama Council, Indonesian Papua Ulama Council, Manokwari District Ulema Council, The Department of Culture and Sports Education, Central Ministry of Religion, Ministry of Religion of West Papua Province, Ministry of Religion of Manokwari Regency, parents and children with measles and rubella) mobilized all health workers (Socialization, Counseling, Internal Meetings and formation of Fast Immunization Driving Teams), and involving the Su Institute Research Society.

Prafi Community Health Center achieved the target on November 5, 2018 as many as 4,426 children (97.81%). Involving all cross sectors, government and community survey institutions through approaches, socialization and continuously trying to convince the community.

5. CONCLUSIONS
Based on the results of the discussion it can be concluded as follows:
1. There was no significant socio-cultural relationship with MR immunization in the Prafi district of Manokwari district. P-Value = 0.102; Rp = 1,518; 98% CI (1,004-2,295).
2. There is no significant relationship between education and MR immunization at the Prafi Community Health Center in Manokwari Regency. P-Value = 0.563; Rp = 0.836; 98% CI (0.542-1,290).
3. There is a meaningful relationship of knowledge with MR immunization at the Prafi Health Center in Manokwari Regency. P-Value = 0.963; RP = 0.936; 98% CI (0.586-1.495).
4. There is no significant relationship between family income and MR immunization at the Prafi Community Health Center in Manokwari Regency. P-Value = 0.398; Rp = 1.261; 98% CI (0.586-1.495).
5. There was no significant relationship between attitude and MR immunization at the Prafi Community Health Center in Manokwari Regency. P-Value = 0.398; Rp = 1.261; 98% CI (0.586-1.495).
6. There is no significant relationship between family support and MR immunization at the Prafi Community Health Center in Manokwari Regency. P-Value = 0.398; Rp = 1.261; 98% CI (0.586-1.495).
7. There is a meaningful relationship of work with MR immunization at the Prafi Community Health Center in Manokwari Regency. P-Value = 0.000; Rp = 3.057; 98% CI (1.599-5.847)
8. There is no significant relationship of affordability to the service location with MR immunization at the Prafi Community Health Center in Manokwari Regency. P-Value = 0.831; RP = 0.910; 98% CI (0.589-1.405)
9. There is no significant relationship between Media Information and MR immunization at the Prafi Community Health Center in Manokwari Regency. P-Value = 0.904; Rp = 1.086; 98% CI (0.672-1.756)

It can be concluded that MR immunization is influenced by socio-cultural variables, education, knowledge, income, attitudes, family support, affordability to service places, and information media. But the most important and most influencing MR immunization is the Job Variable. The work of the respondent greatly influences because it cannot leave work due to duties and responsibilities to the work. Position The work of high and low responders is very influential because work that is dense and cannot be abandoned results in children of respondents whose parents are working not being immunized by MR.

REFERENCES
- Ditjen PP & PL, Depkes RI.2005. Pedoman Teknis Imunisasi Tingkat Puskesmas: Jakarta
- Ditjen PP & PL, Depkes RI dan PART.2005. Modul 1,2,3,4,5,6 Pelatihan Safe Injection: Jakarta
Jeane Deisy Felixiana Lefaan et.al. The Determinant Factors Influencing Immunization Clinics- There Is Nothing in Mr. Prafi Regency Manokwari

- Prayogo A. Kelengkapan Imunisasi Dasar pada Anak Usia 1-5 Tahun. Sari Pediatri.2009;11(1)

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Analysis of Planning and Fulfillment of Health Human Resources Needs in Manokwari District

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ABSTRACT

Background: Health human resources are in accordance with the ratio of population so that services provided can be maximized. The problems that occur in the distribution of health workers have not been evenly distributed in the Manokwari District Health Center which is influenced by inputs and processes and outputs in meeting the needs of health workers.

Research objectives: Analyze planning and fulfillment of health human resources needs of puskesmas in Manokwari District. Research Methods: Qualitative with a case study approach carried out on 22 October - 4 December 2018 with a total of 8 informants using interview guidelines and being accurately acquainted.

Results: The availability and distribution of Health Human Resources in Manowakri District is not sufficient and Efforts to meet the needs of Health Human Resources by receiving contract / apprenticeship workers or honorariums funded by the puskesmas. The unavailability of budgetary resources in the recruitment of adequate health workers and the lack of facilities and infrastructure in meeting the needs of Health Human Resources. There was no planning team in preparing the planning of health HR needs. Information on HR Health data at the Puskesmas is available for health HR needs in Manokwari District. Efforts to fulfill health human resources by holding honorariums and contracts. The method of planning and fulfilling Health Human Resources uses Workload Analysis (ABK) according to the minimum workforce standard from the Minister of Health Regulation Number 75 on year 2014.

Keywords: Planning, Fulfillment, Health Human Resources

1. INTRODUCTION

Health Human Resources (HR) Management Especially health human resource needs planning is still a personnel administration and has not been managed professionally, it is still top down (from the Center), not yet bottom up (from below), not yet in accordance with the needs of the organization and real needs in the field, and have not been oriented in the long term Tri Rini Puji Lestari's (2014) study entitled Analysis of the Availability of Health Workers in Mamuju City Health Center in West Sulawesi Province in 2014 concluded that the lack of a number of health workers in puskesmas made the health workforce's workload higher and not in accordance with the tasks and settings, back of his education. So that in the end it has an impact on the decline in the quality of health center services. For this reason, it is necessary to do a real and comprehensive HR management. Whereas according to Grace A. Salamate et al (2014) entitled Analysis of Health Human Resource Planning at the Southeast Minahasa District Health Office concluded that there was no equity in the procurement of health human resources through the minimum number of formations provided by local governments in the sense of reducing reconciliation.

Manokwari Regency is also the capital of West Papua Province because the center of the West Papua Provincial Government located in Manokwari is also experiencing problems of Health Human Resources, namely in the number, type, distribution and quality of health human
resources. Placement of puskesmas officers is uneven in number and type. The number of Puskesmas in Manokwari District according to Pusdatin's data is 14 health centers with a total number of Health Human Resources as many as 711 people where the distribution of the number and types of Health Human Resources is not balanced. There are a number of puskesmas that do not have several types of health workers and the number of health workers is also lacking but on the other hand there are puskesmas that have both the number and type of HR. The above conditions indicate that the number and distribution of health workers in Manokwari District is still very lacking and uneven.

Based on Law Number 21 Year 2001 concerning Special Autonomy for the Papua Province, which regulates the acceptance and enforcement of special state civil apparatus for Papuan Indigenous People (OAP) including the acceptance and appointment of health human resources at the Health Office. This study aims to obtain in-depth information about the activity of planning the health needs of the Puskesmas in Manokwari District. The results of this study are expected to be input for decision makers and policy makers, especially in the Manokwari District Health Office so that they are able to develop strategic planning policies for health HR needs in 2019-2024. The reason the authors conducted a study of the Analysis of Planning and Fulfillment of Human Resources Needs in Health Centers in Manokwari District was from the above background, because as the capital of West Papua Province the distribution and fulfillment of HR needs for both the number and types of health human resources were not evenly distributed in puskesmas Manokwari Regency so that it can become a benchmark for West Papua Province.

2. RESEARCH METHODS
2.1 Research design
This type of research is descriptive qualitative with a case study approach. The method of case study research examines a particular case or phenomenon that exists in society that is carried out in depth to study the background, circumstances, and interactions that occur. Case studies are better understood as approaches to studying, applying and interpreting a case in its natural context without intervention from outside parties. Dianta all the variety of case studies the most prominent tendency is an effort to highlight a decision or set of decisions that is why the decision was taken, how it was applied and whatever the results (Pongtiku, 2016).

Case studies are carried out on a unified system that can be a program, activity, event or group of individuals that is in certain conditions or conditions. Qualitative methods were chosen because qualitative methods of researching humans interpret their experiences in an event (Willig, 2001).

2.2. Location and Time of Research
The study was conducted at the Manokwari District Health Office and 5 health centers in Manokwari District, namely Puskesmas in urban areas, remote areas and very remote areas.

2.3 Research Time
The study was conducted in October - November 2018

2.4. Population and Informant
1. The population in this study is Health Human Resources in the Manokwari District Health Center.
2. Informants in this study are: Parties involved in Planning Needs and Fulfillment of Human Resources Health of Puskesmas, namely Head of Health Office, Head of information and public relations subsection, Head of Health Resources, Head of general division of law and staff, staff the Health HR section of the Renbut manager at the Health Office which is directly related to the Health HR data source and several Heads of Public Health Centers (Puskesmas) in the Manokwari Regency area. Sources of informants are determined purposively. The purposive technique in question is that the informants interviewed were determined intentionally by the
researcher, because the informant was directly involved with the policy of Planning Needs and Fulfillment of Health HR.

3. RESULTS

Input

Table 1 Minimal Employment Standards for Puskesmas

<table>
<thead>
<tr>
<th>No</th>
<th>Staffs</th>
<th>Puskesmas in City</th>
<th>Puskesmas Village</th>
<th>Puskesmas in remote and isolated areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>RI</td>
<td>Non RI</td>
<td>RI</td>
</tr>
<tr>
<td>1</td>
<td>Primary service doctor / doctor</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Dentistry</td>
<td>1</td>
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<td>1</td>
</tr>
<tr>
<td>3</td>
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<td>5</td>
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</tr>
<tr>
<td>4</td>
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</tr>
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<td>6</td>
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<td>7</td>
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</tr>
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<td>8</td>
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</tr>
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<td>Number</td>
<td></td>
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</tr>
</tbody>
</table>

1) Human Resources

Human Resources (HR) is one of the most important factors that cannot even be separated from an organization, both institutions and companies. In essence HR is employed in an organization as a driver, thinker and planner to achieve organizational goals.

2) Adequacy of Health Human Resources for services in the Puskesmas was reviewed from the availability and distribution of the Community Health Center HRH.

The Ministry of Health through Minister of Health Regulation No. 75 of 2014 concerning Puskesmas stipulates the Minimum Workforce Standard method which is a reference for puskesmas to meet the minimum number of health personnel that must be owned by Puskesmas both in type and number. The minimum standard of work method can be described in the table below:

Based on the results of interviews about the adequacy of HRH for ministers at the puskesmas in terms of the availability and distribution of the Health Center HRH, information was obtained:

"It is sufficient for the bu but if from the calculation of the Workload Analyst there is still a shortage of temporary general practitioners for nurses and midwives who are excess. DMK comes from PNS, Honor and internship." (informant 5) "In my opinion, it is enough that only public health workers do not yet exist." (informant 6) "Praise God all the energy has been fulfilled. If according to me, it has only been fulfilled, it is requested from the service that civil servants must be responsible for the programs' responsibilities. (informant 8). "It's enough because the average sidah is right ... it's ... it's enough ..." (informant 9). But there was one informant who claimed to be different

"In my opinion it has not been fulfilled because we still lack general medical staff, dentists and pharmacies. Especially the general practitioner we really need because the patient wants to be examined by a doctor. For our midwives there are over 3 people" (informant 7)

Based on interviews with informants about the adequacy of HRH for ministers at the green health center from the availability and distribution of the Pusk Puskesmas, 3 informants said that the Pusk Puskesmas was sufficient, 1 person said that it was still enough even though there were 1 type of SDMK and 1 informant said. Besides being based on interview information, it was also obtained from document data available in the health office and from the health center as berkut:
Based on table 2 above, it can be explained that out of the 14 Puskesmas in Manokwari only 3 health centers were fulfilled with 10 types of health workers and 11 other health centers had not met 10 types of health workers. There are 2 health centers that lack 1 type of health worker, there are 8 health centers that lack 2 types of health workers and there is 1 health center that lacks 3 types of health workers. The results of interviews and document data can be concluded that the fulfillment of Community Health Center HRH is still a problem, namely the distribution of HRK is not evenly distributed both the type and number of human resources where there are more HRH but on the one hand there is also a lack of health centers, or more HRH.

a) Empowerment of HRH from Papuan Native People (OAP) in Puskesmas according to the mandate of the Special Autonomy Law. The results of the HRH empowerment interviews from OAP in the Puskesmas were in accordance with the mandate of the Special Autonomy Law, namely: "In my opinion, it fulfills the ma'am ...
(informant 5)
"In my opinion it is fulfilling because in our puskesmas more than fifty percent is OAP" (informant 7)
But there were two informants who answered differently:

"In my opinion, it doesn't meet the bu because there are only a few from OAP in our puskesmas" (informant 9)
"Wow ... if I don't know about OAP and Otusus law, ma'am" (informant 6). In addition to the interviews, the data obtained from the document also illustrates the situation of the Health Human Resources of Puskesmas originating from Orang Asli Papua (OAP) in Manokwari from table 2 below:

Based on table 3 above, it can be explained that the Head of the Puskesmas from OAP and Non OAP from the 14 Health Centers studied were 12 puskesmas whose Head of Puskesmas was Papuan Native (OAP) or 85.71 percent, while 2 Puskesmas Heads came from Non-indigenous Papuans or around 14.29
percent. Whereas based on education level, out of the 14 puskesmas studied there were 1 Head of Community Health Center with a Masters degree (S2) or 7.14 percent or 7.14 percent, 3 Head of Puskesmas with Bachelor degree (S1) or 21.43 percent, 5 Head of Puskesmas with D III education or 35.71 percent, and 5 Heads of Puskesmas with SPK education or 35.71 percent.

Based on the gender of the 14 existing puskesmas heads studied there were 10 Head of Community Health Centers of male sex or 71.43 percent while the Head of the Puskesmas was female as many as 4 people or 28.57 percent. While the division of Head of Community Health Center is based on the age of 14 health centers studied, the heads of Puskesmas aged between 30 years and 39 years are 4 people or 28.57 percent, while the heads of Puskesmas aged between 40 years and 49 years are 8 people or as much as 57.14 percent and the Head of the Puskesmas above 50 years old as many as 2 people or 14.29 percent.

Table 4. The amount of health center health center based on indigenous Papuans and non-indigenous Papuans in Manokwari Regency

<table>
<thead>
<tr>
<th>No</th>
<th>Name of Puskesmas</th>
<th>Number SDMK OAP</th>
<th>Number SDMK Non OAP</th>
<th>Total SDMK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Amban</td>
<td>19</td>
<td>44</td>
<td>63</td>
</tr>
<tr>
<td>2</td>
<td>Maripi</td>
<td>16</td>
<td>38</td>
<td>54</td>
</tr>
<tr>
<td>3</td>
<td>Masni</td>
<td>6</td>
<td>60</td>
<td>66</td>
</tr>
<tr>
<td>4</td>
<td>Pasir Putih</td>
<td>34</td>
<td>24</td>
<td>58</td>
</tr>
<tr>
<td>5</td>
<td>Prafi SP IV</td>
<td>6</td>
<td>66</td>
<td>72</td>
</tr>
<tr>
<td>6</td>
<td>Sanggeng</td>
<td>20</td>
<td>65</td>
<td>85</td>
</tr>
<tr>
<td>7</td>
<td>Sidey</td>
<td>13</td>
<td>18</td>
<td>31</td>
</tr>
<tr>
<td>8</td>
<td>Warmare</td>
<td>24</td>
<td>29</td>
<td>53</td>
</tr>
<tr>
<td>9</td>
<td>Wosi</td>
<td>21</td>
<td>44</td>
<td>65</td>
</tr>
<tr>
<td>10</td>
<td>Nuni</td>
<td>21</td>
<td>12</td>
<td>33</td>
</tr>
<tr>
<td>11</td>
<td>Tanah Rabuh</td>
<td>4</td>
<td>20</td>
<td>24</td>
</tr>
<tr>
<td>12</td>
<td>Mouhja</td>
<td>5</td>
<td>37</td>
<td>42</td>
</tr>
<tr>
<td>13</td>
<td>Mansinam</td>
<td>16</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>14</td>
<td>Sowi IV</td>
<td>17</td>
<td>22</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td><strong>Number</strong></td>
<td><strong>411</strong></td>
<td><strong>300</strong></td>
<td><strong>711</strong></td>
</tr>
</tbody>
</table>

Based on Table 4 above, it can be explained that out of the number of health human resources in 14 puskesmas totalling 711 employees, there are 411 indigenous Papuan Health Human Resources (OAP) or around 57.80 percent while there are 300 health people not Papuan Native employees or around 42.20 percent. Thus there is a difference of 111 employees or 15.60 percent between Papuan Orang Asli health HR and Non Papuan Indigenous health human resources. The data from table 3 and 4 above show that the Manokwari District Government has empowered Health Human Resources for Indigenous Papuans (OAP) in 14 puskesmas at the Manokwari District Health Office.

This can be seen from the data from the head of the puskesmas from 14 puskesmas in Manokwari that 12 puskesmas were indigenous Papuans and from the total health human resources of the puskesmas from 14 puskesmas in Manokwari 57.8% were indigenous Papuans. For Gender Head of puskesmas has been represented by men and women. For the general public health center the average is above 30 years and above so it is expected that they already have sufficient work and sufficient work experience, but what still needs attention from the Manokwari Regency government is that there are still heads of puskesmas with SPK education or below D III still need to improve their education.

a) Influence and adequacy of HRH in meeting the standards of the Center for Accreditation

Based on interviews about the influence and adequacy of HRH in fulfilling Puskesmas accreditation standards, information was obtained as follows: "In terms of accreditation standards, there must be conditions for health personnel, right, they must influence, if it is fulfilling, we always try to fulfill it." (Informant 2)
"Yes, it affects accreditation standards and we strive to fulfill them" (Informant 3)
"Yes ... because all the elements of assessment in puskesmas accreditation are included in the renbut-ABK planning" (Informant 4) "For those who already meet the nurses because they are the largest number in us and the midwife has fulfilled" (Informant 5) "If ... eee ... for accreditation standards in my opinion it has met the standard even in accordance with PPMK 75 already overloaded" (Informant 6)
"There is an influence ... also influence also for BPJS in particular ... no capitation doctors go down" (Informant 7) "In my opinion, it has fulfilled and from the agency, it is requested that 2020 be proposed for accreditation" (Informant 8)
"Already fulfilled" (Informant 9)

The results of the interview can be explained that all informants said HRK influenced the accreditation of puskesmas and seven informants said that SDMK had fulfilled Puskesmas accreditation standards, but one informant said that SDMK did not fulfill the accreditation standard of the health center which influenced the assessment of Puskesmas accreditation standards and Health Human Resources at the puskesmas in Manokwari District it has been fulfilled to fulfill the accreditation standard of the puskesmas. Apart from the interviews, secondary data was obtained from the documentation in table

Table 5. Characteristics of Puskesmas Based on the characteristics of the Puskesmas working area, the ability to administer and accredit the Puskesmas

<table>
<thead>
<tr>
<th>No</th>
<th>Name of Puskesmas</th>
<th>Charateristik area</th>
<th>Ability</th>
<th>Accreditasi of puskesmas</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Amban</td>
<td>Kota</td>
<td>Non Rawat Inap</td>
<td>Dasar</td>
</tr>
<tr>
<td>2</td>
<td>Marpi</td>
<td>Kota</td>
<td>Non Rawat Inap</td>
<td>Dasar</td>
</tr>
<tr>
<td>3</td>
<td>Masui</td>
<td>Terpencil</td>
<td>Rawat Inap</td>
<td>Madya</td>
</tr>
<tr>
<td>4</td>
<td>Pasir Putih</td>
<td>Kota</td>
<td>Non Rawat Inap</td>
<td>Dasar</td>
</tr>
<tr>
<td>5</td>
<td>Prafi SP IV</td>
<td>Terpencil</td>
<td>Rawat Inap</td>
<td>Madya</td>
</tr>
<tr>
<td>6</td>
<td>Sanggeng</td>
<td>Kota</td>
<td>Non Rawat Inap</td>
<td>Madya</td>
</tr>
<tr>
<td>7</td>
<td>Siedey</td>
<td>Terpencil</td>
<td>Rawat Inap</td>
<td>Belum terakreditasi</td>
</tr>
<tr>
<td>8</td>
<td>Warmare</td>
<td>Sangat Terpencil</td>
<td>Rawat Inap</td>
<td>Madya</td>
</tr>
<tr>
<td>9</td>
<td>Wosi</td>
<td>Kota</td>
<td>Non Rawat Inap</td>
<td>Dasar</td>
</tr>
<tr>
<td>10</td>
<td>Nuni</td>
<td>Terpencil</td>
<td>Non Rawat Inap</td>
<td>Belum terakreditasi</td>
</tr>
<tr>
<td>11</td>
<td>Tanah Rubuh</td>
<td>Sangat Terpencil</td>
<td>Non Rawat Inap</td>
<td>Survey</td>
</tr>
<tr>
<td>12</td>
<td>Moubja</td>
<td>Terpencil</td>
<td>Non Rawat Inap</td>
<td>Dasar</td>
</tr>
<tr>
<td>13</td>
<td>Mansinam</td>
<td>Terpencil</td>
<td>Non Rawat Inap</td>
<td>Belum terakreditasi</td>
</tr>
<tr>
<td>14</td>
<td>Sowi IV</td>
<td>Kota</td>
<td>Non Rawat Inap</td>
<td>Belum terakreditasi</td>
</tr>
</tbody>
</table>

From table 5 above, then based on the characteristics of the working area of the Puskesmas it can be grouped into 3 working areas, namely the working area of the city, remote working areas and very remote work areas. The division of work areas is 6 Puskesmas in the city area or 42.86 percent, and 6 health centers located in remote areas or 42.86 percent, and 2 health centers located in very remote work areas or amounting to 14.29 percent. While based on the ability of the organizer, it can be divided into 2, namely the ability to provide nursing care and the inability to provide nursing care. From these data there are 4 health centers that have hospital care or 28.57 percent and 10 health centers that have no hospital treatment or 71.43 percent. Based on the results of the interview on Puskesmas accreditation, it can be explained that the distribution of accreditation for puskesmas in the Manokwari Regency area can be grouped into 4, namely health centers that have not been accredited, Puskesmas have been accredited, health centers with basic accreditation and health centers with intermediate accreditation. From these data there are 5 health centers that have not been accredited or as much as 35.71 percent, 1 health center that has been surveyed or amounted to 7.14 percent, as many as 4 health centers with basic accreditation level or 28.57 percent and 4 health centers with middle level accreditation or 28.57 percent. In addition, from table 4.6 above, it can be explained also that there is a diversity of
accreditation of puskesmas in Manokwari Regency towards the characteristics of the region and its carrying capacity as follows:

1. Basic accredited health center Three non-hospitalized puskesmas in the basic accredited city area, one non-inpatient health center in a remote area with basic accreditation.

2. Public health centers accredited One non-inpatient health center in the city area is accredited mid-level, two puskesmas are hospitalized in remote areas accredited to madya and one inpatient hospital in a very remote area is accredited madya.

3. New health center One non-inpatient health center in a very remote area is only the health center accreditation survey.

4. The health center has not been accredited Two non-hospitalized health centers in the city area have not been accredited, two non-hospitalized health centers in remote areas have not been accredited and one health center in remote areas has not been accredited.

The data above can be concluded that the accreditation of puskesmas is not influenced by regional characteristics or the ability to administer it but is influenced by accreditation standards, one of which is Health Human Resources in the Puskesmas.

Puskesmas services

Based on the results of interviews with informants obtained information as follows:

Services have gone well, if seen from HRH there is still less for doctors, based on ABK there are still gaps. (Informant 5) Here for the activities of the puskesmas, it has been running, but for the very good it is not yet because we are now fixing the waiter system according to the accreditation request. (Informant 6)

In my opinion, it is still not going well because there are no doctors, dentists and pharmacies ... we need those workers especially doctors because people need doctors, as well as dentists if we have patients with toothache we refer to the nearest health center. (Informant 7) It's gone, ma'am, but we are a new health center, so we still see ... it can't be heard, ma'am ... (Informant 8) Service so far has been running with existing HRH, in my opinion it has been running even though it's not very good. (Informant 9)

From the interview results, it can be explained that one informant said that the service at the puskesmas was working well, two people said that it had been running even though it was not very good and one informant said that it had not gone well because there were no health workers in the Puskesmas, already running even though it's not very good.

1) Source of Budget in fulfilling Health Human Resources at Puskesmas

Regarding planning, which includes the provision and distribution of workforce needed by the budget that needs to be prepared by the government in providing health human resources needs.

a) Budget allocation for efforts to fulfill the Pusk Puskesmas

Based on the results of interviews about budget allocations given by the regional government in the effort to fulfill HRH in community organizations (in terms of adequacy and continuity of policy implementation) the reasons cited from the following interview below. We have already proposed a budget allocation, but when we discuss it, we are often crossed out (Informant 2)

Eee ... if talking about honest budget is very lacking, that's what we allocate 2 years, in 2017-2018 ... socialization is not implemented (Informant 3). Regarding the budget allocation for us in the health department, honestly, we still lack (Informant 4) Budget allocation is insufficient ... still poor ... (Informant 8) I think it's enough but ... (Informant 5) Yes ... as this is how mom ... (Informant 6)

For financial problems I don't pay too much attention to mom, it might be wrong, yeah, I am the TU ... I want to pull my head instead of pulling money ... he ... he (Informant 7) I don't know about the budget (Informant 9)
Based on the results of the interview, it was concluded that budget planning in meeting the needs of personnel in the Puskesmas, one informant said that the budget had been proposed but when the discussion was often crossed out, three informants stated that the budget was still lacking and one person stated enough. Three informants said they did not know about the budget in the planning of health workers at the Puskesmas.

**Follow-up addressing budget issues**

Responding to these matters from the responses of informants regarding the problems of the budget allocation Actually there is no problem for the budget, because they have BOK funds, there are JKN, it can all be used because there are several sources of funds in the puskesmas, there are JKN, there are BOK and operations so they can use it all ... there are jampersal ... actually a lot budget at the puskesmas (Informant 2).

Well ... we have tried to advocate to the regent but until now it has not been able to because of the limited budget, hopefully in the future it will be better (Informant 3). There are many activities in HR, but we still have to do it with collaboration and integration so that it can be implemented. Suggestions, it is also important to provide incentives for renbut managers at the puskesmas because HR planning is not carried out by all puskesmas (Informant 4)

We adjust it to the activities of the bu, either from the BOK or from JKN (Informant 5) We carry out activities according to available funds (Informant 6) So far, we rarely propose a budget for development (Informant 7). The effort hopes for the management of the BOK funds themselves, self-operational and JKN itself, as well as incentives that honor manokwari including the smallest in West Papua, only hoping that regional governments increase the nominal incentives for honorary employees. (Informant 8)

**Facilities and infrastructure**

Provision of facilities and infrastructures in addition to supporting health workers in the Puskesmas to improve health services in their respective working areas.

a) **Infrastructure facilities to support the fulfillment of HRH and Puskesmas Operations**

The statement of the informant about the means to support operations was quoted from the following interview below. I think it has been fulfilled even though not all (Informant 2)

If we average it, there are still many who are lacking ... then if we talk at work ... we are still struggling, for example, we have NSI, a place to stay in a doctor's house, mattress, no, I have to buy from personal money because I feel sorry to serve us it is fitting that we also meet their needs ... sorry if they have to sleep on the floor. (Informant 3) For sarpras, there are a number of puskesmas that are in accordance with PK 75, but there are also some that are not suitable for the mother. For medical devices, they have begun to be equipped according to the mother's PMK (Informant 4)

The local government has not yet fully fulfilled Sarpras, but we have health centers that have JKN funds and can share with each other, meaning that we are issuing RUK and reporting to the health office to consider Sarpras what the district government and Puskesmas will fund so that they can complement Sarpras puskesmas (Informant 5) For sarpras, it is not sufficient for all service activities, especially if we ask for NSI, for example, the conditions must be a place to live for them. He only has official houses for doctors. (Informant 6)

Not yet fulfilled, for facilities ... here there is no latency for dentists, indeed our dentists don't exist yet, but if we want to propose asking dentists, there must be lat dentists so they can work. Also for official housing facilities ... NS still lives in the doctor's house, only the problem is they are often disturbed. (Informant 7) The infrastructure facilities are sufficient to support the service to the community (Informant 8). Mothers are fulfilled, but
there are many that are damaged which cannot be used. We made requests to the health office but there was no response (Informant 9)

Based on the information, it can be explained that six informants said that Puskesmas infrastructure facilities were insufficient to support efforts to fulfill HRH and puskesmas operations, two informants said that they were sufficient, so it could be concluded that facilities or infrastructure to support HRK and operational puskesmas bulum were fulfilled.
Follow-up taken to fulfill the Puskesmas infrastructure facilities as quoted from the following interview below. Indeed we are constraints in the house, but every year we fix one by one, we cannot at the same time complete everything we gradually complete (Informant 2)

There needs to be a joint commitment, especially in synergy with the regional staff administration agency in dividing the existing equal distribution of energy while we as the source of information must also be clear and need cooperation, because usually there are workers who have been placed in other health centers, but he doesn't work there other puskesmas that are closer, so there needs to be cooperation in this system, so that the facilities and infrastructure will be more adequate and measurable for each puskesmas (Informant 3)

Communicating with policy holders in determining HR and operational needs, so there are shortcomings that can be known and sought for joint solutions, because so far the lack of energy also affects the calculation of existing facilities and infrastructure (Informant 4)

From the interview results, it can be explained that one informant said the follow-up to fulfill Puskesmas facilities or infrastructure by completing it in stages, two informants said that policy support from the local government and joint commitment and fulfillment in stages.

4. DISCUSSION

4.1. An overview of the situation of the adequacy of Health Human Resources from the availability and distribution of Health HR

In Law No. 36 of 2014 Health workers are all people who are devoted to the health sector and possess knowledge and skills through education in the health sector which requires certain types of authority to carry out health efforts. Health workers have an important role to improve the quality of maximum health services to the community so that the community is able to increase awareness, willingness and ability to live healthy so that the highest degree of health will be realized as an investment in the development of socially and economically productive human resources as well as wrong one element of general welfare as referred to in the Opening of the 1945 Constitution of the Republic of Indonesia.
Various studies show that health workers are a key factor in the success of achieving health development goals. Health workers contribute up to 80% in the success of health development. (Ministry of Health, 2011). Of all available Health Human Resources, around 40% work in Puskesmas.
The number of health workers is quite large but the distribution is not evenly distributed. In addition, the health human resources who work in the Puskesmas, the composition of the type of energy is still very unbalanced (Indonesian Ministry of Health, 2015).

The number of health human resources in 14 health centers totaling 711 employees, there were 411 indigenous Papuan Health Human Resources (OAP) or around 57.80 percent while there were 300 employees from non-Papuan Native Health or around 42.20 percent. Thus there is a difference of 111 employees or 15.60 percent between Papuan Orang Asli health HR and Non Papuan Indigenous health human resources. The data from table 3 and
4 above show that the Manokwari District Government has empowered Health Human Resources for Indigenous Papuans (OAP) in 14 puskesmas at the Manokwari District Health Office.

This can also be seen from data from the head of the puskesmas from 14 puskesmas in Manokwari that 12 puskesmas are indigenous Papuans and from the total health human resources of the puskesmas from 14 puskesmas in Manokwari 57.8% are indigenous Papuans. For Gender Head of puskesmas has been represented by men and women. For the age of the puskesmas head, the average is above 30 years and above, so it is expected that they have sufficient work and sufficient work experience, but what still needs the attention of the Manokwari Regency government is where there are heads of Puskesmas with SPK education or below D III. improved education.

Based on the Special Autonomy Law in article 27 as cited that (1) the Provincial Government establishes provincial staffing policies based on norms, standards and procedures for the management of Civil Servants in accordance with the laws and regulations. (2) In the event that the provisions referred to in paragraph (1) are not fulfilled, the Provincial Government and the Regency / City Government may establish staffing policies in accordance with the needs and interests of the local area. (3) The implementation of the provisions referred to in paragraph (2) is regulated by Perdasi.

4.2. Source of budget in recruiting health human resources

Some of the problems faced by the current district / city government in the implementation of HRH are the lack of commitment of the local government in budget support, planning that has not described HRH planning for each institution, the number and capacity of HRH planning staff is still low and information data (Permenkes No. 33 2015 concerning Guidelines for Preparing Health Human Resource Needs Planning, 2015). Lukman's (2005) research in Aceh Besar District, concluded that there was a gap between the need and the state of labor in the health center due to the absence of professionals in human resource planning, not using a power calculation method, the absence of proper planning. Merlinda (2011) based on the results of her research in the Mentawai Islands concluded that the planning system had not gone well due to incomplete data available and inaccurate data, lack of socialization and information on policies used in planning health workers and lack of consultation and coordination well.

4.3. Facilities and infrastructure in meeting the needs of Health Human Resources

In the era of globalization, the development of the service sector is increasingly important in efforts to improve public welfare and health. Puskesmas as the first strata health center, which is holistically responsible for the efforts of individual health services and public health efforts requires the support of quality health center staff as well as supporting adequate facilities and infrastructure. The availability of health human resources greatly influences the success of health development. Procurement of health human resources aims to determine the amount and type of energy that is in accordance with needs. If human resource needs are not well planned, there will be a shortage of personnel that affects service and patient comfort and results in increased workload (Paruntu, 2015).

Increasing the number of residents and lack of improvement in the kjulmah of health human resources can lead to increased workloads and services that are not optimal and health programs for the community do not work well, meanwhile every year through community aspirations many new villages and sub-districts are demanding construction of new health clinics and puskesmas to bring health services closer to the community. Physically the health center facilities continue to
increase every year, while the availability of health human resources that have been lacking, will certainly experience greater shortages. The policies adopted must have a clear agenda for the short, medium and long term. The informant's statement that the facilities and infrastructures in the Puskesmas in the Manokwari Regency area were quite adequate, but there were still shortcomings. This is because the existing facilities are in line with the management staff in carrying out the functions of the tools used. From the statements of informants, the needs of existing staff are dentists, so that not all puskesmas can serve dental examinations.

**Health HR needs planning team**

The results of interviews with informants were obtained that in the preparation of the HR HR workforces planning in Manokwari District, the results of the interviews were not formed by the planning team. HRK is someone who works actively in the health sector, whether or not having formal health education, which for certain types requires authority in carrying out health efforts (Permenkes No. 33 of 2015 concerning Guidelines for Preparing Health Human Resource Needs Planning, 2015).

Good management of HR management will certainly affect the quality of health services provided (Kabene, Orchard, Howard, Soriano, & Leduc, 2006). As done in Blitar District, anticipating an increase in community accessibility to health services in 24 existing health centers by recommending efforts to regulate health work to improve service quality that begins with an analysis of employment policies (Laksono, Pudjirahardjo, & Mulyono, 2012). A literature study conducted by Elarabi and Johari (2014) states that effective HR management will have a strong influence on service quality and the development of hospital staff performance.

According to Robert L. and Jackson (2006) in Lestari (2014) HR management there are several groups of activities that are interconnected with each other, namely: 1). HR planning and analysis. Done to anticipate the forces that will affect the inventory and demands of employees in the future. 2). Equality of employment opportunities. Compliance with laws and regulations regarding equality of employment opportunities affects all other HR activities and is integral to HR management. 3). Appointment of employees. Aim to provide adequate provision for qualified individuals to fill job vacancies in an organization. The absence of a team from HR Health planning shows that these HR needs can occur due to lack of coordination related to the needs and methods that are in accordance with the planning of Health HR needs. This shows the lack of seriousness of the Health Office in planning HR needs that are in accordance with existing needs.

**4.5. Information on Puskesmas Health HR data**

Information about Health HR data at the Puskesmas from the informant statement revealed that the informants had attended training - training or outreach on the perencanana of HR needs using existing methods in accordance with Permenkes No. 33 of 2015 concerning Guidelines for Preparing Health Human Resource Needs Planning, 2015). Based on the results of the data search that the planning of the health of human resources at Puskemsas uses the ABK method. The use of this method is in accordance with the existing socialization, but until now the distribution of health workers in the Puskesmas was uneven, of which 14 Puskesmas as many as 6 puskesmas had fulfilled the number of available HR.

**4.6. Efforts to fulfill the needs of Health Human Resources**

The main issue in the development of health human resources is the imbalance of HR related to the number, type of health personnel, functions, and distribution. Research at the Sajingan Besar Health Center, Sambas District, found that the number of health workers including general
practitioners available at the puskesmas still lacked and there were health workers who did not match their competencies, so it was not enough to complete all health service efforts at the puskesmas (Suharmiati, Handayani, & Kristiana1, 2012 in Hasiu, 2017). Of the 14 Puskesmas in Manokwari District only 3 health centers were met by 10 types of health workers, while 11 other health centers were not yet fulfilled 10 types of health workers. There are 2 health centers that lack 1 type of health worker, there are 8 health centers that lack 2 types of health workers and there is 1 health center that lacks 3 types of health workers. The results of interviews and documentary data can be concluded that the fulfillment of Community Health Center HRH is still a problem, namely the distribution of HRK is not evenly distributed both the type and number of human resources where there are more HRH but on the one hand there is also a lack of health centers, or more HRH.

This research is in line with the research conducted by Pandesia (2017) in North Minahasa Regency, the number of Health Workers that are still needed is found by Informants who do not know exactly how many Health Workers are still needed, but based on the statements of Informants both for Puskesmas and Health Service shortage of health workers. The shortcomings of health workers in the Puskesmas and in the effort to obtain these employees from the statements of informants from several Puskesmas raised honorary, apprenticeship or voluntary staff and some puskesmas wrote to the health office to be approved and could be provided by health workers to meet existing HR vacancies.

5. CONCLUSION

a. Description of the situation of the adequacy of Health Human Resources from the availability and distribution of Health Human Resources in Manokwari District is insufficient
b. There are no sufficient budgetary resources in the effort to fulfill adequate human health resources in Manokwari Regency
c. Facilities and infrastructure in meeting HR needs Health in the Puskemas is still lacking.
d. There was no planning team in preparing the planning of the need for Health HR in Manokwari District
e. Information on Health Center Health HR data is available.
f. Efforts to fulfill HR human resources needs in health centers that are under-staffed by receiving contract / apprenticeship staff or honorariums funded by puskesmas, honorariums by the regional government and proposing to the Ministry of Health through the Nusantara Healthy program.

REFERENCES


Sugiyono, 2014, Metode Penelitian Kualitatif, Cetakan ketiga, Alfabeta, Bandung


Analysis of the Effect of Development of Hospital Management Information System Based on Knowledge Management on Employee Performance of Dr Wahidin Sudirohusodo, Makassar

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ABSTRACT
This study aims to (1) find out the relationship between knowledge management hospital management information system development on employee performance, (2) analyze the influence of knowledge management hospital management information system development on employee performance, (3) analyze the partial influence of home management information system development knowledge management based pain towards employee performance. The study uses quantitative methods with explanatory correlational designs. Sampling is done by purposive sampling method with a sample size of 94 people. Data were analyzed using Yates Correction Test and Multiple Regression. The results of the study show that there is a relationship between the development of knowledge management SIMRS and employee performance. There is the influence of the development of knowledge management SIMRS on employee performance. Only 2 of the 4 knowledge management SIMRS development variables have a partial effect on employee performance, namely Knowledge Transfer and Knowledge Application.

Keywords: Knowledge Management Process, SIMRS, Employee Performance

INTRODUCTION
Today the development of organizations in all sectors is increasingly leading to intense competition, competition in the form of services, ease of systems and product excellence continues to force every organization to make improvements and improvements. Knowledge is considered to be an important weapon in achieving and maintaining an organization's competitive advantage (Rastogi 2000; Senge 2000). Knowledge has a very important role in the progress of a company / organization. Many companies increasingly recognize the importance of knowledge as one of the capital to achieve competitive advantage. The more advanced knowledge the company has, the higher the company's competitiveness. Knowledge creation in an organization cannot be done instantly, but it requires processes and enabler factors (supporting factors to make it happen). The stages of creating knowledge in organizations in the context of the application of knowledge management begin with enablers factors that will trigger a knowledge management process, which then results in organizational creativity, which in turn will have an impact on organizational performance (Lee & Choi, 2003). Available electronic resources are the first target for information seekers, faced with new challenges to provide relevant and timely information and come from many sources. In other words it is challenged to provide the entire spectrum of information, not only limited to explicit knowledge, so it is necessary to explore the concept of applying Knowledge Management in the work environment, including hospitals which are a very important part of a health system.
If the Information System is implemented well in the context of the Hospital, it will change the health care system over the next few decades to be more cost effective, prevent errors, and measurable public resources. Carl Davidson and Philip Voss (2003) say that actually managing knowledge is the way organizations manage their employees, and how long they spend on information technology. The existence of the Hospital Information System (SIRS) implemented by Dr. Wahidin Sudirohusodo Hospital has made the importance of knowledge continuously explored, processed, managed and developed continuously using information technology so that data, information and knowledge are more easily displayed and communicated and become a place for sharing between parts / unit within the Hospital. Moreover, with the Regulation of the State Minister for Administrative Reform and Bureaucratic Reform Number 14 of 2011 concerning Guidelines for Implementing Knowledge Management Programs that expect Ministries / Agencies and Regional Governments to actively participate in the implementation of Knowledge Management that can be utilized in policy formulation and benchmarking for the implementation of bureaucratic reform.

MATERIALS AND METHODS
Location and Design of Research
The study was conducted for 1 (one) month, namely the first Sunday of July 2014 to the third week of July 2014 was held at RSUP Dr. Wahidin Sudirohusodo Makassar.

Population and Samples
The population is all employees of RSUP Dr. Wahidin Sudirohusodo Makassar totaling 1,580 employees. The research sample amounted to 94 employees.

Method of collecting data
Primary data: data obtained by researchers for specific purposes in answering research problems (Malhotra, 2000). Primary data collection in this study was carried out through the distribution of questionnaires prepared to all respondents.

Secondary Data: data collected for specific purposes other than research problems (Malhotra, 2000). Secondary data in the form of Profiles and Annual Reports and Performance Reports of Dr Wahidin Sudirohusodo Hospital Makassar.

Data analysis method
The method of data analysis in this study is descriptive statistics, namely the frequency distribution of measurement results of research variables and analytical statistics, namely the method of analyzing collective and separate contributions of two or more independent variables on variations in the dependent variable [Kerlinger and Pedhazur, 1973].

RESULTS AND DISCUSSION
Univariate analysis in this study was conducted on categorizing variables on respondents’ answers regarding Knowledge Creation, Knowledge Storage / Retrieval, Knowledge Transfer and Knowledge Application, Development of RS Management Information Systems and Employee Performance. From the results of the univariate analysis, it was found that 94.7% of respondents thought Knowledge Creation was good as part of the Knowledge Management Process in the development of information systems even though there were still 5.3% of respondents who argued that Knowledge Creation was not good, this was confirmed by Mohanta, 2006 which states that some things that can improve performance are with Information Technology and Knowledge Management where of course there is a process of knowledge creation that is expected to continue to take place.

From the results of the univariate analysis it was found that 93.6% of respondents thought Knowledge Storage was good as part of the Knowledge Management Process in the development of information systems even though there were still 6.4% of respondents who thought Knowledge Storage was still not good,
knowledge storage and retrieval was very important in the development and refinement of a hospital SIM. The majority of Knowledge Transfer held by Respondents is in the Good category as part of the Knowledge Management Process in the development of information systems as many as 89 employees or as much as 94.7% while the respondents who are in the Poor category are only 5 employees or 5.3% of the total respondents.

The majority of knowledge applications owned by respondents are in the Good category as many as 91 employees or equal to 96.8% while the respondents who are in the category of Poor are only 3 employees or 3.2% of the total respondents. The development of the Hospital Management Information System owned by the majority of respondents is in the Good category as many as 88 employees or as much as 93.6% while the respondents who are in the Poor category are only 6 employees or 6.4% of the total respondents.

The majority of Employee Performance held by Respondents is in the Good category, as many as 87 employees or 92.6% while the respondents who are in the Poor category are only 7 employees or 7.4% of the total respondents. Bivariate analysis was conducted to determine the relationship between independent variables Knowledge Management Development of RS-based SIM with the dependent variable Employee Performance at Dr. RSUP Wahidin Sudirohusodo Makassar by conducting cross tabulations and statistical analysis using Chi Square by using a degree of confidence $\alpha = 0.05$.

The results of the Chi Square Test statistical analysis by looking at the value of the Fisher Exact Test about the relationship between the Development of Knowledge Creation on Employee Performance at RSUP DR. Wahidin Sudirohusodo Makassar in 2014.

The results of the Chi Square Test statistical analysis by looking at the value of the Fisher Exact Test about the relationship of the Development of a Knowledge Management-based RS SIM based on Knowledge Storage on Employee Performance at RSUP DR. Wahidin Sudirohusodo Makassar obtained the value of $\rho (0,000) <\alpha (0.05)$. This shows that there is a relationship between the Development of Knowledge Management RS SIM based on Knowledge Storage on Employee Performance at RSUP DR. Wahidin Sudirohusodo Makassar in 2014.

The results of the Chi Square Test statistical analysis by looking at the value of the Fisher Exact Test about the relationship of the Development of Knowledge Management based on Knowledge Transfer to Employee Performance at RSUP DR. Wahidin Sudirohusodo Makassar obtained the value of $\rho (0,000) <\alpha (0.05)$. This shows that there is a relationship between the Development of a Knowledge Management-based RS SIM based on Knowledge Transfer to RSUP DR. Wahidin Sudirohusodo Makassar in 2014.

The results of the Chi Square Test statistical analysis by looking at the value of the Fisher Exact Test about the relationship between the Development of Knowledge Management-based RS SIM to RSUP DR.
Wahidin Sudirohusodo Makassar obtained the value of $\rho (0.000) < \alpha (0.05)$. This shows that there is a relationship between the Development of Knowledge Management-based RS SIM on the Employee Performance of RSUP DR. Wahidin Sudirohusodo Makassar in 2014.

Multivariate analysis was carried out to determine the Knowledge Management Development RS-based variables that influence the Employee Performance of RSUP DR. Wahidin Sudirohusodo Makassar in 2014 used Multiple Regression Analysis. The probability value obtained is less than $\rho (0,000) < \alpha (0.05)$, which means that the overall variable is the Development of Knowledge Management-based RS SIM consisting of Knowledge Creation, Knowledge Storage / Retrieval, Knowledge Transfer and Knowledge Application, together (simultaneously) affect the Employee Performance of RSUP DR. Wahidin Sudirohusodo.

The partial test results (t-test) show that the Knowledge Creation variable has a value of $\rho (0.063) > \alpha (0.05)$ which means that the Development of a Hospital SIM based on Knowledge Management based on Knowledge Creation does not affect the Employee Performance of RSUP DR. Wahidin Sudirohusodo Makassar partially. The Knowledge Storage / Retrieval variable Partial test result (t-test) shows the value of $\rho (0.332) > \alpha (0.05)$ which means that the Development of RS MIS based on Knowledge Management based on Knowledge Transfer does not affect RSUP DR. Wahidin Sudirohusodo Makassar partially.

The results of the partial test (t-test) Knowledge Transfer variable shows the value of $\rho (0.024) < \alpha (0.05)$ which means the Development of RS MIS based on Knowledge Application has an effect on the Employee Performance of RSUP DR. Wahidin Sudirohusodo Makassar partially. The next analysis is the determination coefficient test obtained $R^2 = 0.495$ which can be interpreted that 49.5% of RSUP DR. Wahidin Sudirohusodo Makassar is influenced by the Development of an RS SIM based on Knowledge Management which consists of Knowledge Creation, Knowledge Storage / Retrieval, Knowledge Transfer and Knowledge Application while 50.5% can be influenced by other factors.

CONCLUSIONS AND RECOMMENDATIONS
Based on the results of the research that has been done, it can be concluded that there is a relationship between the Development of Knowledge Management-based RS SIM on the Performance of RSUP DR. Wahidin Sudirohusodo Makassar in 2014. Development of Knowledge Management-based RS SIM has an effect on RS Employee Performance, From the 4 variables of Knowledge Management Based on SIM SIM, only 2 have partial influence, namely Knowledge Transfer and Knowledge Application. It is expected that the Director of RSUP DR Wahidin Sudirohusodo Makassar to make the results of this study as a continuous step of improvement to improve the RS Information System, this research can be used as basic data for further research related to improving employee performance and Hospital Information Systems.

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REFERENCES
- Amaliah Hastyanti Putri, Evaluasi Implementasi Knowledge Management System PT. Telekomunikasi Indonesia,
- Balan, Adina. Information and Knowledge Management – A Strategy for Performing Medical Services in The Informational Era, Univesity of Craiova.
- Dessne, Karin, 2012. Supporting Knowledge Management with Information Technology The Significance of Formal and Informal Structures, School of Science and Technology, Orebro University
- Done, Adrian, 2011. Supply Chain Knowledge Management: A Conceptual Framework, IESE Business School, University of Navarra
- Lee, Heeseok & Choi, Byounggu, 2003. Knowledge Management Enablers, Processes, and Organizational Performance, Division of Management Engineering Korea Advanced Institute of Science and Technology
- Ou, Carol X.J & Davidson, Robert M. Knowledge Management Problems, Causes, and Solutions: Junior Knowledge Workers Perspectives, Dept of Information Systems, Citi University of Hongkong, 11th Pacific – Asia Conference on Information Systems
- Kock, Jr & McQueen, Robert J. Gorupware Support for Organisational Learning: Fostering Knowledge Dissemination Through Process Improvement Groups, Dept. Of Management System, University of Waikato
• Rahayu, Sri, 2013. Implementasi Pengaruh Knowledge Management Terhadap Kinerja Karyawan dan Kepuasan Pelanggan PT. Anugrah Tata Senthika, Media Mahardika Vol. 11 No. 3, Mei 2013
• Rollet, Herwig, Knowledge Management Processes and Technologies, Kluwer Academic Publisher, Boston/Dordrecht/London
• Pradana, Bayu Ilham, 2011. Hubungan antara Knowledge Management dan Organizational Learning serta Dampaknya pada Organizational Effectiveness, Program Pascasarjana Fakultas Ekonomi Universitas Brawijaya, 2011
• Yahfizham,_____. Penerapan Teknologi Berupaya Meningkatkan Produktivitas Sumber Daya Manusia, http:www.foxitsoftware.com


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Factors Influencing Acute Respiratory Infection Incidence to Child Under Five Years in Sentani Health Primary Jayapura District

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ABSTRACT

Background: Acute Respiratory Infection is a health problem that can cause death in infants. Various factors are caused by the sex of children under five, immunization status and nutritional status, parents (mother) include age, education, socio-economic, smoking habits in the home, burning garbage, the use of mosquito repellent.

Objective of the study: Evaluate what factors are related to the incidence of ARI in Sentani Health Center, Jayapura District, Papua Province.

Research Methods: Descriptive analytical cross-sectional study design. The population of all under-fives was 232 toddlers and a sample of 70 under-fives was random sampling. Data were obtained using a questionnaire and analyzed using chi square and regression binary logistic.

Results: Factors related to ARI incidence in infants in Sentani Health Center were immunization status of children under five (p-value = 0.015; RP = 2.551; CI95% = (1.278 - 5.091), nutritional status of children (p-value = 0.000; RP = 5.359; CI95% = (2.818 - 10.191), education mother (p-value = 0.026; RP = 2.538; CI95% = (1.197 - 5.384), smoking habits (p-value = 0.000; RP = 18.391; CI95% = (4.659 - 72.601), habit of burning garbage in the home environment (p-value = 0.000; RP = 3.955; CI95% = (2.118 - 7.383), habit of using mosquito repellent (p-value = 0.000; RP = 4.889; CI95%; = (2.532 - 9.331). Factors not related to the incidence of ARI in toddlers at Sentani Health Center are toddlers (p-value = 0.234; RP = 1.728; CI95% = (0.823 - 3.627), maternal age (p-value = 0.601; RP = 1.362; CI95% = (0.648 - 2.863), economic status (p-value = 0.332; RP = 1.593; CI95% = (0.766 - 3.313). The dominant factor in the incidence of ARI in infants is smoking in the household. The habit of using mosquito repellent and the habit of burning garbage in the home environment.

Keywords: Acute, Respiratory, Infection, Child

1. INTRODUCTION

ARI occurring in children under five (aged 12-59 months) from the Syahidi study (2016) revealed that toddlers suffering from ARI were found more in mothers with low education and maternal age >35 years, incomplete immunization status, giving vitamin A capsules, mother’s knowledge, kitchen smoke, mosquito repellent use, house ventilation and the presence of family members who smoke inside the house.

Some of the characteristics of mothers with low education tend to be those who have a severe ARI. This is due to the fact that with higher maternal education, his knowledge is increasingly high about the management of ARI. Whereas the family socio-economic is more than the minimum wage able to provide their children with better nutrition and immediately bring their toddlers to treatment compared to low socio-economics (Sukarto, 2016).

Research Maramis (2013) revealed that education has no effect on the ability to care for toddlers with ARI, this is due to mothers who are highly educated parents who are too busy with their careers or jobs, lack of information received directly from health workers and the tendency of parents to entrust children to caregivers or other family members to be taken to the Puskesmas. Besides that, young mothers...
Factors Influencing Acute Respiratory Infection Incidence to Child Under Five Years in Sentani Health Primary Jayapura District

1-5 years in Sentani Health Center in June - August 2018 who visited 232 toddlers.

2. Samples
The sample is a portion of the population considered to represent WITH 70 respondents (Notoatmodjo, 2012).

3. RESULTS

3.1. Relationship between sex of toddlers and the incidence of ARI in infants

Based on Table 1, it shows that of the 29 under-fives who were male as many as 11 people (37.9%) with the incidence of ARI and not ARI as many as 18 people (62.1%). While from 41 people who were female as many as 9 people (22%) with the incidence of ARI and not ARI as many as 18 people (62.1%). The results of the chi square test obtained p-value = 0.234 > 0.05. This means that there is no relationship between the sex of the toddler to the incidence of ARI in infants in Sentani Health Center. Prevalence ratio test results (RP) = 1,728; CI95% = (0.823 - 3.627) with a lower value does not include 1 which means that gender is not a risk factor for the incidence of ARI.

3.2. Relationship between toddler immunization status and the incidence of ARI in infants

Based on Table 2, it shows that out of the 17 under-fives who were incomplete immunization status as many as 9 people (52.9%) with ARI incidence and not ARI as many as 8 people (47.1%). While from 19 people who were complete as many as 8 people (42%) with the incidence of ARI and not ARI as many as 10 people (58%). The results of the chi square test obtained p-value = 0.015 < 0.05. This means that there is a relationship between the sex of the toddler to the incidence of ARI in infants in Sentani Health Center. Prevalence ratio test results (RP) = 2.531; CI95% = (1.278 - 5.091) with a lower value does not include 1 which means that gender is not a risk factor for the incidence of ARI.
many as 8 people (47.1%). While from 53 people with complete immunization status as many as 11 people (20.8%) with ARI incidence and not ARI as many as 42 people (79.2%). The results of the chi square test obtained p-value = 0.015 <0.05. This means that there is a relationship between the status of immunization of children under five to the incidence of ARI in infants at Sentani Health Center. Prevalence ratio (RP) = 5,539; CI95% = (1,278 - 5,091) which means that the immunization status of incomplete toddlers is likely to have ARI events 5,539 times higher than toddlers with complete immunization status.

3.3 The relationship of nutritional status of children with the incidence of ARI in infants

<table>
<thead>
<tr>
<th>No</th>
<th>Nutritional status of children</th>
<th>Incidence of ARI</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ARI</td>
<td>Not ARI</td>
</tr>
<tr>
<td>1</td>
<td>Less</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Good</td>
<td>9</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20</td>
<td>50</td>
</tr>
</tbody>
</table>

p-value = 0.000; RP = 5.359; CI95% = (2.818 – 10.191)

Based on Table 3, it shows that of the 13 children under five with poor nutritional status as many as 11 people (84.6%) with the incidence of ARI and not ARI as many as 2 people (15.4%). While from 57 toddlers with good nutritional status as many as 9 people (15.8%) with ARI incidence and not ARI as many as 48 people (64.2%). The results of the chi square test obtained p-value = 0.000 <0.05. This means that there is a correlation between the nutritional status of children under five years of ISPA in infants at Sentani Health Center. Prevalence ratio test results (RP) = 5,359; CI95% = (2,818 - 10,191) which means that the nutritional status of children under five is less likely to have ARI events 5,539 times higher than toddlers with good nutritional status.

3.4. Relationship between mother's age and the incidence of ARI in infants

<table>
<thead>
<tr>
<th>No</th>
<th>Age of the mother</th>
<th>Incidence of ARI</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ARI</td>
<td>Not ARI</td>
</tr>
<tr>
<td>1</td>
<td>&lt; 25 Year</td>
<td>8</td>
<td>34.8</td>
</tr>
<tr>
<td>2</td>
<td>&gt; 25 Year</td>
<td>12</td>
<td>25.5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20</td>
<td>28.6</td>
</tr>
</tbody>
</table>

p-value = 0.601; RP = 1.362; CI95% = (0.648 - 2.863)

Based on Table 4, it shows that out of 23 toddlers aged <25 years as many as 8 people (34.8%) with ARI incidence and not ARI as many as 15 people (65.2%). While from 47 mothers of children under the age of 25 years as many as 12 people (25.5%) with the incidence of ARI and not ARI as many as 35 people (74.5%). The results of the chi square test obtained p-value = 0.601> 0.05. This means that there is no relationship between the age of the mother and the incidence of ARI in infants at Sentani Health Center.

3.5. Relationship between mother's education and the incidence of ARI in infants

<table>
<thead>
<tr>
<th>No</th>
<th>Mother's education</th>
<th>Incidence of ARI</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ARI</td>
<td>Not ARI</td>
</tr>
<tr>
<td>1</td>
<td>Low</td>
<td>12</td>
<td>46.2</td>
</tr>
<tr>
<td>2</td>
<td>High</td>
<td>8</td>
<td>18.2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20</td>
<td>28.6</td>
</tr>
</tbody>
</table>

p-value = 0.026; RP = 2.538; CI95% = (1.197 - 5.384)

Based on Table 5, it shows that of the 26 mothers of children under five with a low level of 12 people (46.2%) with the incidence of ARI and not ARI as many as 14 people (53.8%). While from 44 mothers of children with high education as many as 8 people (18.2%) with the incidence of ARI and not ARI as many as 36 people (81.8%). The chi square test results obtained p-value = 0.026 <0.05. This means that there is a relationship between maternal education and the incidence of ARI in infants at Sentani Health Center.
2,538; CI95% = (1,197 - 5,384) which means that the education of mothers who are low in their children is at risk of ARI by 2,538 times higher than under-educated mothers.

3.6. Relationship between family economic status and the incidence of ARI in infants

Table 6. Relationship between family economic status and the incidence of ARI in infants at Sentani Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Family economic status</th>
<th>Incidence of ARI</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ARI</td>
<td>Not ARI</td>
</tr>
<tr>
<td>1</td>
<td>Less</td>
<td>10</td>
<td>37</td>
</tr>
<tr>
<td>2</td>
<td>Enough</td>
<td>10</td>
<td>23.3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20</td>
<td>28.6</td>
</tr>
</tbody>
</table>

*p-value = 0.332; RP = 1.593; CI95% = (0.766 - 3.313)

Based on Table 6, it shows that from 27 people with economic status of less families as many as 10 people (37%) with the incidence of ARI and not ARI as many as 17 people (63%). While from 43 people, there was enough economic status as many as 10 people (23.3%) with the incidence of ARI and not ARI as many as 33 people (76.7%). The results of the chi square test obtained p-value = 0.332 > 0.05. This means that there is no correlation between the family economic status of the incidence of ARI in children under five at Sentani Health Center. The prevalence ratio (RP) = 1.593; CI95% = (0.766 - 3.313) with a lower value does not cover 1 which means that the economic status of the family is not a risk factor for the incidence of ARI in infants.

3.7. Relationship between smoking habits in the home and the incidence of ARI in infants

Table 7. Relationship between home smoking habits and the incidence of ARI in infants at Sentani Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Home smoking habits</th>
<th>Incidence of ARI</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ARI</td>
<td>Not ARI</td>
</tr>
<tr>
<td>1</td>
<td>Yes</td>
<td>18</td>
<td>78.3</td>
</tr>
<tr>
<td>2</td>
<td>Not</td>
<td>2</td>
<td>4.3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20</td>
<td>28.6</td>
</tr>
</tbody>
</table>

*p-value = 0.000; RP = 18.391; CI95% = (4.659 - 72,601)

Based on Table 7, it shows that out of 23 people with smoking in the home as many as 18 people (75%) with the incidence of ARI and not ARI as many as 3 people (25%). While from 47 people who did not have smoking habits in the home as many as 2 people (4.3%) with ARI incidence and not ARI as many as 45 people (95.7%). The results of the chi square test obtained p-value = 0.000 < 0.05. This means that there is a relationship between smoking habits in the home to the incidence of ARI in infants in Sentani Health Center. Prevalence ratio test results (RP) = 18.391; CI95% = (4,659 - 72,601) with a value that means that smoking habits in the home 18,391 times higher chance of occurrence of ARI compared to no smoking habit in the home.

4. DISCUSSION

4.1 Relationship between sex of toddlers and the incidence of ARI in infants

The results of the study were obtained from the results of statistical tests that there was no relationship between toddlers' sex to the incidence of ARI in infants in Sentani Health Center Jayapura Regency (p-value = 0.234 > 0.05). This research is in line with the previous one conducted by Fibrila (2015) in Lampung Province, revealing that the lower types of kelurahan were not related to the incidence of ARI.

This research of the number of 29 toddlers who were male as many as 11 people (37.9%) while from 41 people who were female as many as 9 people (22%) with the incidence of ARI. This shows that the majority of men who have prosenase do not differ greatly from the incidence of ARI, which from the results of the prevalence ratio test (RP) with a lower value does not cover 1 which means that the sex of children under five is a protective factor against the incidence of ARI.

According to Sari (2017), that boys have a higher risk than girls affected by ARI, because boys play more often outside the home so that air exposure is more than girls who are more dominant playing in the house. While in this study the sex of toddlers boys and girls have the same opportunities as the incidence of ARI. This condition is made possible by a shift in habits in children. At present both boys and
girls have the same tendency to play. In this era children play more often in the house with available facilities than playing outside the home. So that the variable factor that is stronger relates to the survival of ARI such as smoking habits in the home, burning garbage in the home environment and using fuel mosquito repellent.

4.2. Relationship between immunization status of infants and the incidence of ARI in infants

The results of the study were obtained from the results of statistical tests that there was a relationship between immunization status of children under five years of ARI in infants in Sentani Health Center (p-value = 0.015 <0.05). This research is in line with previous research conducted by Oktaviani (2017) in the Teluknaga District Health Center, Tangerang Regency, revealing the same thing that incomplete immunization status is associated with the incidence of ARI in infants. Provision of immunization is one attempt to establish an antibody system in the human body. Antibodies formed from immunization require time to function. Completeness of immunization can help the formation of antibodies optimal is expected to suppress the development of the disease does not become more severe if exposed to ARI. Infants and toddlers who have had measles and survivors will get natural immunity against pneumonia as a complication of measles. Most ARI deaths come from the type of ARI that develops from diseases that can be prevented by immunization (Maryunani, 2013).

Toddlers with incomplete immunization status at Sentani Health Center were 9 people (52.9%) with ARI events, while toddlers with complete immunization status in children under five were lower with ARI incidents of 11 people (20.8%). The prevalence ratio test results that incomplete immunization status of children under five is likely to have ARI events 2,551 times higher than toddlers with complete immunization status. Paying attention to the problem of complete immunization with the incidence of ARI in infancy is a period of growth of each body system. This condition certainly causes toddlers vulnerable to infection. Factors that support children who are not susceptible to infection are to increase immunity through immunization. Thus, the importance of basic immunization for children, so the role of puskesmas officers in providing counseling to mothers so that their children get immunizations for children under five whose immunization is not complete.

4.3 Relationship between nutritional status of children with ARI in infants

The results of the study were obtained from the results of statistical tests that there was a relationship between nutritional status of children under five years of ARI in infants in Sentani Health Center (p-value = 0,000 <0,05). Previous research conducted by Widia (2017) revealed that the nutritional status of children under five is related to the incidence of ARI due to the lack of nutritional status that causes a lack of endurance for children under five. Toddlers are a group of people who are vulnerable to malnutrition, in this group experiencing a cycle of growth and development that requires nutrients that are greater than other age groups so that toddlers are the easiest to suffer from nutritional disorders. The incidence of malnutrition is like an iceberg phenomenon where the incidence of malnutrition can cause death. In the case of malnutrition, it will be more susceptible to infection due to decreased immunity against invading pathogens. Good growth and adequate immunological status will also produce good health (Parii, 2014).

The number of children under five in Sentani Health Center with less nutritional status was 11 people (84.6%) with ARI incidence, while under fives with good nutritional status were 9 people (15.8%) with ARI events. This shows that children with good nutritional status are lower with the incidence of ARI compared with toddlers who are under nutrition. This is reinforced from the results of the prevalence
ratio test that the nutritional status of good toddlers is likely to have an ARI incidence of 5.539 times higher than that of toddlers with poor nutritional status. According to Maryunani (203), ARI is more common in toddlers, this may be closely related to the problem of the baby's immune system that is still not too strong compared to adults. In a state of good nutrition, the body has enough ability to defend itself against infectious diseases. Whereas if the state of nutrition becomes bad, then the body's immune reaction will decrease so that the body's ability to defend itself against infection will decrease. This event is caused by the process of formation of antibodies that are disturbed or inhibited and eventually the production of these antibodies will decrease. This decrease results in the body being more vulnerable or susceptible to infection. So the condition of malnutrition and the incidence of ARI often work together and foster a poor prognosis.

The role of Pukesmas officers can increase maternal knowledge through the role of posyandu when toddlers are weighed by providing counseling about giving balanced gizi intake so that mothers' knowledge increases and influences the provision of nutrition to their children.

4.4. Relationship between the age of the mother and the incidence of ARI in infants

The results of the study were obtained from the results of statistical tests there was no relationship between maternal age and the incidence of ARI in infants in Sentani Health Center (p-value = 0.601 > 0.05). This research is in line with the one conducted by Syahidi (2013) in the Puskesmas Kelurahan Tebet Barat, Tebet Subdistrict, South Jakarta, revealing that the age of the mother is not related to the incidence of ARI in infants. The mother's age of children under the age of <25 years is 8 people (34.8%) with the incidence of ISPs, while the age of mothers of children under the age of > 25 years is 12 people (25.5%) with the incidence of ARI. This shows that the mother's age is the same as the chance for the occurrence of ARI in infants.

This agrees with Maramis (2013) that the age of a mother of a toddler who is younger, has a stronger memory and creativity is higher in finding and knowing something unknown before compared to older people. Besides that, the ability to absorb new knowledge is younger because the brain functions optimally at a young age. Whereas according to Prayoto (2014), that increasing age a person will experience changes in physical and psychological (mental) aspects. In the psychological or mental aspects, the level of thinking of a person becomes more mature and mature (Prayoto, 2014).

Thus that at the age level things related to age are knowledge that comes from information about prevention of ARI. In this study, knowledge was not included in this study, but from the percentage of ARI shows that in this variable there are factors such as maternal action in prevention of toddlers such as smoking habits in the home, habits of burning garbage in the home environment and the habit of using mosquito repellent related to the age of the mother in the prevention of ARI in infants.

4.5. Relationship between mother's education and the incidence of ARI in infants

The results of the study were obtained from the results of statistical tests that there was a relationship between maternal education on the incidence of ARI in infants in Sentani Health Center (p-value = 0.026 < 0.05). This is in line with the research conducted by Chandra (2017), stating that maternal education is one of the factors that influence the behavior of ARI prevention. There is a positive relationship between the level of education and ARI prevention behavior, the higher the education level of the respondents, the better the proportion of respondents' actions. Low under five mother's education as many as 12 people (46.2%) with ARI incidence, while mothers of under-fives with lower education were 8 people (18.2%) with ARI.
events and from the results of the prevalence ratio test that low maternal education was 2,538 times as high as toddlers with ARI as much as compared to mothers with low education.

Mother's education is closely related to family health. Mothers generally play a role in maintaining the health of infants and toddlers. All efforts are made so that the baby remains healthy. Therefore maternal education is very important in maintaining the health of infants and toddlers. A well-educated mother will have sufficient insight in maintaining the health of her baby and child. Efforts to prevent ARI can be done by Sentani Health Center staff by increasing counseling efforts to mothers, so that mothers with low education can understand how to care for the family, especially care for babies and their babies.

4.6. Maternal socio-economic relationship with the incidence of ARI in infants

The results of the study were obtained from the results of statistical tests there was no relationship between family economic status of the incidence of ARI in infants in Sentani Health Center (p-value = 0.332 > 0.05). This research is in line with the research conducted by Supran (2017), that the economic status of the family is not related to the incidence of ARI. Relationships with health are also less evident clearly that poverty is closely related to disease, it's just difficult to analyze which cause and which results. Economic status determines the quality of food, occupancy, density, nutrition, education level, availability of clean water, sanitation facilities, size family, technology etc. Income levels are often associated with the use of health services and prevention. Someone is not utilizing existing health services maybe because there is not enough money to buy medicine, pay for transportation and others (Prayoto, 2014).

The economic status of the family is less than 37% with the incidence of ARI, while sufficient family economic status is as much as 23.3% with the incidence of ARI and from the results of the time trial there is a relationship but not significant to the incidence of ARI. This is due to the economic status of the family which is sufficient to fulfill all the needs needed, but the economic status of the family is lacking, the mother is very concerned about and maintains the health of her baby because mothers with income <3 million per month are more selective in fulfilling their needs because This economy is enough that mothers are more concerned with things that are very important for their children in meeting their dietary needs and immunization so that children are not easily sick.

4.7. Relationship between smoking habits in the home and the incidence of ARI in infants

The results of the study were obtained from the results of statistical tests there was a relationship between smoking habits in the home to the incidence of ARI in infants in Sentani Health Center (p-value = 0.000 <0.05). The results of this study are in line with the research conducted by Sofia (2017), revealing that toddlers who live at home with smokers in homes are more susceptible to ARI. The number of smokers will be proportional to the number of sufferers of health problems. Cigarette smoke will increase the risk for toddlers to get ARI attacks.

In-house smoking habits carried out by family members as many as 18 people (75%) with ARI events, while family members who do not have smoking habits in the home as many as 2 people (4.3%) with ARI events and from the results of the prevalence ratio test which means that home smoking habit 18,391 times higher chance of ARI compared to no smoking habit in the home. Winarni's results show that toddlers who live at home with smokers in homes are more susceptible to ARI. The number of smokers will be proportional to the number of sufferers of health problems. Cigarette smoke will increase the risk for toddlers to get ARI attacks. Cigarette smoke is not only a direct cause of ARI in infants, but an indirect factor which can weaken the
immune system of toddlers. Cigarette smoke can reduce the ability of macrophages to kill bacteria. Cigarette smoke is also known to damage local lung resistance, such as mucociliary cleansing ability. So the presence of family members who smoke is proven to be a risk factor that can cause respiratory disorders in children under five (Winarni, 2010).

This can occur in homes where ventilation is lacking and the kitchen is located in a house united with a bedroom, a baby room and a toddler playing. This is more likely because babies and toddlers are at home with their mothers longer, so the pollution dose will certainly be higher. Mother's prevention of ARI can be done by reminding family members who smoke so that they do not smoke at home or stop smoking in addition to harming health as well as detrimental to the family economy because they simply throw away money that is not useful.

4.8. Relationship between the habit of burning garbage in the home environment with the incidence of ARI in infants

The results of the study obtained from the results of statistical tests there is a relationship between the habit of burning garbage in the home environment to the incidence of ARI in infants in Sentani Health Center (p-value = 0.000 <0.05). The results of this study are in line with the research conducted by Sofia (2017), revealing that family habits of burning waste are more susceptible to ARI disease. The smoke of burning trash has a detrimental effect on health such as lung cancer, asthma, tuberculosis, cataracts, heart disease, babies born with low body weight, blindness, and even affect children's brain abilities (Maryunani, 2013).

The habit of family members burning garbage in the home environment as many as 9 people (75%) with the incidence of ISPs, while family members who did not have smoking habits in the home were lower as many as 11 people (19%) with the incidence of ARI. The prevalence ratio test results obtained that the habit of burning trash in the home environment is 3.955 times higher chance of ARI events than there is no habit of burning garbage in the home environment. According to Smith (2016), that burning of waste as a major cause of health problems is caused by incomplete combustion having the same impact as cigarettes is even more dangerous because the amount of smoke is very large. The compound produced is like burning a thousand cigarettes every hour. Prevention efforts can be carried out by the family so as not to burn waste and should dispose of garbage in a place that has been provided by the government.

5. CONCLUSIONS

1. There is no relationship between the sex of the toddler to the incidence of ARI in infants in Sentani Health Center (p-value = 0.234; RP = 1.728; CI95% = (0.823 - 3.627).
2. There is a relationship between immunization status of children under five years of ARI in infants in Sentani Health Center (p-value = 0.015; RP = 2.551; CI95% = (1.278 - 5.091).
3. There is a relationship between nutritional status of children under five years of age in ISPA in infants in Sentani Health Center (p-value = 0.000; RP = 5.359; CI95% = (2.818-10.191).
4. There is no relationship between maternal age and the incidence of ARI in infants in Sentani Health Center (p-value = 0.601; RP = 1.362; CI95% = (0.648 - 2.863).
5. There is a relationship between mother's education on the incidence of ARI in infants in Sentani Health Center (p-value = 0.026; RP = 2.538; CI95% = (1.197 - 5.384).
6. There is no family socio-economic relationship to the incidence of ARI in infants in Sentani Community Health Center (p-value = 0.032; RP = 1.593; CI95% = (0.766 - 3.313).
7. There is a relationship between smoking habits in the home to the incidence of ARI in infants in Sentani Health Center (p-value
8. There is a relationship between the habit of burning garbage in the home environment to the incidence of ARI in infants in Sentani Health Center (p-value = 0.000; RP = 3.955; CI95% = (2,118 - 7,383).

REFERENCES

Yonece Wadi et.al. Factors Influencing Acute Respiratory Infection Incidence to Child Under Five Years in Sentani Health Primary Jayapura District


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Analysis of E-Catalogue Drug Procurement with E-Purchasing Method in Papua Barat Province

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ABSTRACT

Background: Management of pharmaceutical preparations including drugs to meet service needs starts from planning, procuring, requesting, receiving, storing, distributing, controlling, recording, reporting, filing, monitoring and evaluating. The process of procuring drugs uses e-catalogue using e-purchasing methods. The research objective: To find out the realization of the procurement of e-catalogue medicine using e-purchasing in West Papua Province

Research Methods: Qualitative with the number of informants as many as 6 people conducted in October-November 2018 at the District Health Office. Teluk Wondama, Manokwari and the Arfak Mountains use interview guidelines and observations. Data is analyzed qualitatively.

Results: The input of E-purchasing HR procurement at the Teluk Wondama District and Manokwari District Health Offices was sufficient and in the Arfak Mountains District there was insufficient and no internet network. The budget is sufficient. Availability of facilities and infrastructure is sufficient to support the E-purchasing process based on drug procurement. The needs planning process is based on the e-catalogue but still cannot avoid the drug vacuum. Distribution process or delivery of drugs based on the number, type and time of delivery, is in accordance with the contract made. There are obstacles in the form of contract changes (addendum) related to the delivery time. Output of drug availability in warehouse is not in accordance with predetermined indicators caused the drug emptiness is caused by the number of drugs that are not all realized, when drug delivery by distributors, drug vacancies have occurred nationwide, and the absence of an information system that can warn the number of drugs entering the minimum stock, so that the order is not late.

Keywords: e-Catalogue Drug Procurement With e-purchasing Method

1. INTRODUCTION

The availability or fulfillment of medicines at the District Health Department Pharmacy Installation must be carried out to guarantee and improve the quality of health services in public health service units such as in Puskesmas or at Sub-Puskesmas and Pos Yandu or other health service units commonly called First Level Health Facilities (FKTP), so that there is a need for guarantees regarding the accessibility of drugs that are safe, efficacious, quality and affordable in terms of types and sufficient quantities.

Management of pharmaceutical preparations including drugs to meet service needs starts from planning, procuring, requesting, receiving, storing, distributing, controlling, recording, reporting, filing, monitoring and evaluating management. (Minister of Health Regulation Number 74 of 2016). Fulfillment of drug needs in the Pharmacy Installation District or City Health Office is carried out every year in accordance with the current year DIPA which can be carried out through electronic methods commonly called e-Purchasing by referring to electronic catalogs of drugs or commonly called e-Catalog drugs, as well
as other methods justified by the Act.

West Papua Province has 12 Regencies and 1 City characteristic of West Papua province which is different from several provinces in the central region or western regions of Indonesia, Sorong City and Manokwari Regency have been connected directly with other provinces with good air and sea transportation and internet network access. Some districts, if seen from the affordability of transportation and internet network technology support, are still limited, but for planning and procurement of government goods / services procurement must be through a system of procurement or e-procurement (Inpres Number 1 of 2015) including procurement of medicines at the Office Pharmacy Installation District Health.

The procurement of electronic goods and services with e-Purchasing and e-Catalog methods has been carried out since 2012, but until it is still considered unable to fulfill requests according to orders from the District Health Office or Pharmacy Installation, so that it can inhibit the service / availability of drugs in the type and amount of medicine in the first level health facility. Drug fulfillment through e-Purchasing through e-Catalog medicine is also greatly affected by the Drug Needs Plan which is inputted through the application of the drug catalog e-monitoring and evaluation by the pharmaceutical installation or pharmacy section of the District / City Health Office.

Apart from that, drug fulfillment through e-Purchasing can be influenced by time of online transactions conducted by pharmacy installations or health department pharmacy sections as customers for the pharmaceutical industry or pharmaceutical wholesalers appointed as distributors by the pharmaceutical industry to deliver drugs to the pharmacy department health installation.

Based on the initial survey we conducted through interviews with the person in charge of the pharmaceutical installation and / or pharmacy section of the District Health Office, procurement carried out with the e-Purchasing method was not 100% fulfilled in accordance with the e-Purchasing carried out previously, the length of time needed from purchasing to with the drug received, sometimes the drug is accepted not in accordance with purchasing both in terms of number, type of drug, physical condition of the drug and short expiration so that to meet these shortcomings is done by other methods.

Based on the background above, the objectives to be achieved from this study were to analyze the procurement of e-Catalog drugs with the e-Purchasing method in the province of West Papua.

2. MATERIALS AND METHODS
2.1 Type and Location of Research
This type of research is a qualitative study by analyzing the procurement of drugs e-Catalog with e-Purchasing method.
2.2 Place and Time of Research
This research was conducted in West Papua Province with the target of Pharmacy and Health Service Offices in Wondama Bay Regency by reason of representing coastal districts, Manokwari District Health Office representing urban areas and District Health Service of Arfak Mountains representing mountains. The time of the study was conducted from October to November 2018.
2.3. Research Informants
Informants are people who can provide information about things needed in research. Research informants are those who have authority in drug logistics management in the pharmaceutical installations of each district. Sampling in this study is based on certain considerations or purposive sampling made by the researchers themselves based on the characteristics or nature of the population of pharmacists or other health workers at the Pharmacy Installation and the Pharmacy District Health Office. The informants in this study were:
1. Key informants (key informants), namely someone who fully and deeply knows about drug logistics management at the District...
Health Office installation. The key informants in this study were 1 Head of the Pharmacy Section and also the Head of Pharmacy Installation in Teluk Wondama Regency, 1 Manokwari Regency Pharmacy Section Head, 1 Head of the Pharmacy Section and also the Head of the Regency Pharmacy Installation in the Arfak Mountains.

2. Supporting informants, namely people who know the logistical logistics of District Pharmacy, namely 1 person Head of Pharmacy Installation of Manokwari Regency, 1 person from Pharmacy Section of Teluk Wondama Regency and 1 person from Pharmacy Section of Manokwari Regency.

The criteria for informants are informants:

a. Involved in drug procurement activities by e-Purchasing starting from the stage of preparation of drug plans to the receipt of drugs in the District Pharmacy Installation
b. Able to communicate well.
c. Located at the location of the study during the study.
d. Willing to be an informant.

3. RESULTS

Based on research that has been carried out in three District Pharmacy Installations and Sections namely Teluk Wondama Regency, Manokwari Regency, Arfak Mountains Regency, data can be obtained about the factors that influence e-Catalog drug procurement with the e-Purchasing method in the three districts through in-depth interviews as follows.

<table>
<thead>
<tr>
<th>No</th>
<th>Informant</th>
<th>Age</th>
<th>Work period (year)</th>
<th>Education</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Informan 1 (SR) *</td>
<td>38</td>
<td>10</td>
<td>Apoteker</td>
<td>Kasie Seksi Farmasi dan Kepala Instalasi Farmasi Kab Teluk Wondama</td>
</tr>
<tr>
<td>2</td>
<td>Informan 2 (MS)*</td>
<td>40</td>
<td>14</td>
<td>Apoteker</td>
<td>Kasie Seksi Farmasi Kab Manokwari</td>
</tr>
<tr>
<td>3</td>
<td>Informan 3 (BN)</td>
<td>30</td>
<td>4</td>
<td>Apoteker</td>
<td>Staf Instalasi Farmasi Kabupaten Teluk Wondama</td>
</tr>
<tr>
<td>4</td>
<td>Informan 4 (AD)</td>
<td>35</td>
<td>12</td>
<td>Asisten Apoteker</td>
<td>Staf Seksi Farmasi Kabupaten Manokwari</td>
</tr>
<tr>
<td>5</td>
<td>Informan 5 (ZA)</td>
<td>50</td>
<td>19</td>
<td>Asisten Apoteker</td>
<td>Kepala Instalasi Farmasi Kabupaten Manokwari</td>
</tr>
<tr>
<td>6</td>
<td>Informan 6 (YB)*</td>
<td>35</td>
<td>9</td>
<td>Apoteker</td>
<td>Kepala Seksi dan Kepala Instalasi Farmasi Kabupaten Pegunungan Arfak</td>
</tr>
</tbody>
</table>

* Key informants

Based on table 4.4 above can be obtained information that the age of informants ranged from 30 years to 55 years. From all informants there were 1 informant whose job was Non ASN, out of 6 informants there were 6 people with pharmacy education background and of the 6 people 4 of them were Pharmacists. All key informants are Head of Pharmacy Section and educated Pharmacist.

Procurement of drugs carried out in Manokwari Regency, Teluk Wondama has used drug procurement with E-Purchasing procedures based on E-Catalog. While in the Arfak Mountains District, the E-Purchasing procedure has not been used due to the limitations of the internet network. This E-Purchasing Procurement was carried out in 2013 until now. E-Purchasing is the procedure for purchasing goods / services through an electronic catalog system or E-Catalog. Policy for Procurement of drugs based on E-Catalog in E-Purchasing aims to improve effectiveness and efficiency in the procurement of drugs. There are several processes in the procurement of drugs in E-Purchasing, this procurement process is supported by input in its implementation. The following is the E-Purchasing input, process and output of drug procurement.

1. Human Resources

Human resources are one of the inputs to procuring drugs in an E-Purchasing manner. The available human resources procured are explained by in-depth interviews and reviews of related documents Human resources assigned to procure pharmaceuticals. Based on the
The results of in-depth interviews with several informants, it was found that the human resources available in the procurement team in Manokwari Regency, Wondama Bay were 4 people, namely two procurement officials, one APBDN procurement officer and the Regional Budget, and one Staff. These procurement officials have their respective duties, namely there are procurement officers for the public and procurement of pharmaceuticals. The number of Pharmacy procurement officers who are in charge of procuring drugs in an E-Purchasing consists of Pharmacy Procurement Officers namely Head of Pharmacy Installation, assisted by two officers namely one planning officer and procurement staff. This is based on interviews with the three informants, all three of whom stated that there were 3 HR: 

"For the number of procurement officers in general, there are three people who are 2 people specifically for the APBN and APBD plus 1 staff and one person from the planning who often helps the mother when e-Purchasing is purchased, for the procurement of pharmacy I am only one also from procurement and staff "(SR, 38 years, October 24, 2018)

In general there are officials of the State Budget 2, procurement officials apbd 1, staff 1. Some of the procurement officials have served as one-person pharmacy procurement, but also often assisted by mothers of planning and procurement staff (MS, 40 years, 7 November 2018). For procurement for my e-Catalog or pharmacy that holds and co-workers who help and I also help the less. (HN, 30 years, 25 October 2018).

Procurement for e-Catalog medicine is not carried out and carried out by auction or direct procurement (YB, 35 years, 11 November 2018).

The task of procuring drugs based on e-Catalog in e-Purchasing is based on a review of documents regarding e-Cataloging purchases made by submitting proposals for procurement to the head of the pharmacy section approved by the Head of Service. After being approved, the drug will be purchased e-Purchasing. This task is assisted by planning officers by helping prepare the drug needs planning that will be submitted, as well as staff who help prepare the data needed in the procurement of drugs in e-Purchasing.

Based on in-depth interviews conducted with informants it is known that the number of procurement officers in the Health Office is still lacking, moreover the procurement staff is only one for all procurement of either BMHP or drugs and for procurement officers also has multiple tasks besides procurement also responsible for drug planning, and receiving drugs. This is based on interviews with the three informants, the three of whom mentioned that the existing HR is still lacking:

"HR is right, if in my opinion we still lack people. Besides that not everyone can also enter here to become a procurement team because there must be a certificate from and the terms of LKPP. And not everyone in the Health Office has the certificate "(SR, 38 years, October 24, 2018). "Procurement officers at the pharmacy are still lacking, coupled with only having one staff whose job is to handle 3 other acting staff. in my opinion Where only one official can be staffed 3, it means that this staff handles 3 officials. Make the procurement of staff only one, for procurement in general and pharmacy, here I also work as a procurement officer, planning, and goods receiving officer "(MS, 40 years, 7 November 2018)

The number of officers involved in the E-purchasing procurement process was 2 people in Wondama Bay Regency and Manokwari Regency. Procurement officers involved in drug procurement by e-Purchasing have a pharmacy education background, such as planning and procurement officers are Pharmacists, operator officers are also Pharmacists in Teluk Wondama District while operators are Pharmacist Assistants. Based on the explanation above, it can be concluded that the Human Resources available in the
procurement of drugs by E-Purchasing, in the number of officers is still lacking but for the quality of procurement officers already have a pharmaceutical education background, namely a Pharmacist.

2. Policy

The results of in-depth interviews and document review conducted by the researchers indicate that the E-Purchasing drug procurement policy has been implemented since this regulation was issued, namely in 2013. This policy is used as a guideline in the procurement of drugs. The policy is in the form of Minister of Health Regulation No. 63 of 2014 concerning the procurement of drugs based on e-Catalog in e-Purchasing. In addition, procurement officers also refer to RI Presidential Regulation No. 4 of 2015 concerning the procurement of government goods/services. This is based on interviews with two informants, the two informants said that the procurement of drugs refers to existing government policies and guidelines: "For our policy, refer to the latest Perpres, namely Perpres No. 4 of 2015 and the E-Catalog policy itself, in addition to policies there must also be technical guidelines that come out together with the policy itself. We also implement procurement guidelines that have been socialized to us every year. "(SR, 38 years, October 24, 2018)

"We have implemented this policy from the outset of this policy, there are several policies related to this procurement. the E-Cataloguee policy is in itself, the Presidential Regulation concerning the procurement of goods and services. "(MS, 40 years, 7 November 2018)

Policies issued by the government are accompanied by technical instructions and procedures in assisting the Health Office operational activities. There are procedures for procurement of drugs, as well as procedures related to drug procurement, namely drug planning procedures and receipt of goods. The procedure has been documented in the form of a standard operating procedure book issued by the Health Office. Drug procurement and BMHP operational procedure standards at the Health Office:

1) The Puskesmas submits a proposal for procurement to the pharmaceutical section with the approval of the head of the department.
2) The head of the pharmacy section has the right to approve the proposal for procurement of drugs and BMHP.
3) If the proposal is approved, the pharmaceutical supplies coordinator coordinates with the procurement officials.
4) For direct purchase of the head of the Puskesmas, it can buy itself if there is a small drug vacuum.
5) For psychotropic, narcotics and precursor orders, they still use psychotropic/narcotics/precursor order letters, even though they have been ordered through e-Purchasing.
6) Coordinator of pharmaceutical supplies filing SP

In addition to the operational standard procedures above, there are also several procedures and technical instructions and regulations related to e-Catalogue procurement of drugs based on e-Catalogue, namely:

Table 2. Procedures related to the procurement of drugs based on E-Catalogue in E-purchasing

<table>
<thead>
<tr>
<th>No</th>
<th>Procedure</th>
<th>Kinds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Operational standards for drug planning and BMHP procedures</td>
<td>Technical guidelines</td>
</tr>
<tr>
<td>2</td>
<td>Operational standards for drug planning and BMHP procedures</td>
<td>Technical guidelines</td>
</tr>
<tr>
<td>3</td>
<td>Operational standards for drug planning and BMHP procedures</td>
<td>Technical guidelines</td>
</tr>
<tr>
<td>4</td>
<td>Minister of Health Regulation Number 63 of 2014 concerning the procurement of drugs based on E-Catalogue</td>
<td>Government Regulation</td>
</tr>
<tr>
<td>5</td>
<td>Technical guidelines for procurement of drugs in E-purchasing</td>
<td>Technical guidelines</td>
</tr>
<tr>
<td>6</td>
<td>Presidential Regulation No. 4 of 2015 concerning the procurement of government goods and services</td>
<td>Government Regulation</td>
</tr>
</tbody>
</table>

In the first year of the issuance of drug procurement policies in e-Purchasing, namely in 2013, this policy included guidance from the LKPP for health facilities as e-Catalogue application users, this guidance was also included an explanation of e-
Purchasing technical guidelines for purchasing. Guidelines or technical guidelines issued by the LKPP in the form of a chart are felt easy to understand in addition to that also often held guidance from LKPP so that procurement officers more easily understand the procedures or technical guidelines provided. This is based on interviews conducted with two informants, both of whom stated that procedures and technical guidelines were easily understood:

"We at the time of the issuance of the regulations, we immediately started and from the LKPP side we also immediately provided training and technical guidance to us regarding the LKPP Procedure, so we can understand e-Catalog quickly because we got training, so we understand the procedure of lkpp. The procedure is also easy to understand because it is clear and gradual" (SR, 38 years, October 24, 2018)

"Existing procedures for purchasing drugs in e-Purchasing are easy to understand, moreover the instructions used are simple, so they are easier to understand and apply" (MS, 40 years, 7 November 2018). Based on the explanation above, it can be concluded that the e-Purchasing policy of drug procurement has been understood by officers and there are several procedures and technical instructions in the Health Office, namely standard drug planning procedures and BMHP, operational standards for drug procurement procedures and BMHP, operational standards for drug procurement procedures and BMHP, technical instructions for purchasing drugs by e-Purchasing, Permenkes No. 58 concerning e-Catalog, Republic of Indonesia Presidential Regulation No. 4 of 2015 concerning the procurement of government goods and services.

3. Facilities and infrastructure

Facilities and infrastructure are also one of the inputs that support the smooth running of drug procurement activities at the Health Office. Data on facilities and infrastructure were obtained through in-depth interviews, observation and document review. The following are the results of a review of documents related to facilities and infrastructure related to e-Purchasing drug procurement in Wondama Bay District and Manokwari Regency:

<table>
<thead>
<tr>
<th>No</th>
<th>Good name</th>
<th>Regeency of Teluk Wondama</th>
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</table>

Based on the table above there are several facilities, namely computers, scanners, printers, LCD computers, laptops, various kinds of tables, and air conditioners. The results of this document review are also supported by observations what was done was that the facilities in the document were already in place, besides that also in the procurement room there were also chairs and an unwritten internet network in the inventory of the procurement room.

Based on the results of in-depth interviews conducted with the three informants, it is known that the facilities and infrastructure in the Manokwari Health Office are sufficient to carry out the e-Purchasing process, while the Teluk Wondama Regency is an unstable network which disrupts the e-Purchasing process and for Arfak Mountains Regency facilities and infrastructure to conduct e-Purchasing there are shortcomings, especially for electricity.
that is not stable and frequent power outages and internet networks that do not yet exist so that it becomes an obstacle in the e-Purchasing process, procurement of drugs is carried out offline or direct procurement and procurement. "The facilities and infrastructure here are sufficient and for procurement based on e-Catalog also does not require too much equipment, the most important thing is that we must have a computer / laptop, fast internet network, stationery, and office space like a desk and cupboard. All of them are enough to help the procurement process "(SR, 38 years, October 24, 2018)

Facilities and infrastructure for e-Catalog purchase are the most, laptops, internet, office equipment, rooms, already quite enough for facilities and infrastructure so there are no constraints lacking the tools we have, besides, the internet is also always stable. The problem with e-Catalog is that it is often difficult to access it last week from Thursday can not be accessed. So that's the problem in the e-Catalog if the ingredients are good (MS, 40 years, 7 November 2018).

"For e-Catalog procurement facilities and infrastructure there are not too many. We need computers, tables, chairs, stationery, telephones and rooms to work, and stable internet access. Everything has been fulfilled so that the process runs smoothly "(HN, 30 years, 25 October 2018).

Based on the explanation above, it can be concluded that the Health Office has sufficient facilities and infrastructure to support the process of procurement of drugs by e-Purchasing. The following means inside e-Purchasing medicines in the form of tables, chairs, cabinets, books / shelves, computers / typewriters, office stationery, telephones and stable internet access. In addition, it also features infrastructure in the form of a procurement official's room.


The process of planning drug needs carried out by the Health Office is related to the procurement of medicines in e-Purchasing with consumption patterns. Drug procurement planning data is obtained through in-depth interviews and document review. The planning process for procuring medicines at the Health Office has several stages, along with the stages: 1) First the drug planning department is used to use consumption patterns to see drug use in the last 1 (one) year, so that any drug that is needed is needed for the Health Service by considering the reserve stock for the drug. This is based on interviews conducted with the two informants, both of whom stated that planning for the procurement of drugs uses consumption patterns:

"The planning process will vary, but we are here using consumption patterns we see drug use in the last year, which is the one with the least amount of medication so we can determine how many drugs we have to buy. Besides that we also pay attention to the buffer of 20% (SR, 38 years, October 24, 2018)"

We make plans based on consumption methods, so we see usage for three years "(MS, 40 years, 7 November 2018)"

2) After you know what drugs you use are many and already calculate how much to buy, then the next thing to do is look at electronic catalogs or E-Catalogs on the website, by looking at e-Catalog officers can sort out which drugs enter e-Catalog with e-Purchasing procedures and those that don't enter e-Catalog. Medicines that are not included in e-Catalog are made outside of e-Catalog. This is based on interviews with two informants, both of whom stated that the buying process was divided into two: "This plan was made for procurement in general, after we saw the usage later, then we will separate which one can we buy using e-Catalog and non-e-Catalog by looking at the E-Catalog website (SR, 38 years, October 24, 2018)" "So we see e-Catalog first. We print everything first. Because if we compile it directly e-catalogue and non e-Catalog (MS, 40 years, 7 November 2018)"

3) After that the order process is carried out by submitting the purchase of medicine to
the head of the pharmaceutical installation who will be forwarded to the head of the supporting field with the approval of the head of the medical support section. This is based on the results of interviews with two informants, both of whom stated that the order was made with the agreement of several parties: "Before making an order, it will be submitted first, starting from planning to the head of the pharmacy section and continuing to the Head of SDK for approval" (SR, 38 years, 24 October 2018)

"We will make an order if the submission that we submit has been approved by the head of the pharmaceutical installation, the supporting department and the medical section head." (MS, 40 years, 7 November 2018). The explanation above is also supported by the results of a review of the operational standard documents for drug needs planning procedures and BMHP, which contains general planning processes, which are carried out by the warehouse coordinator who makes compilation of drug use and BMHP, using drug data and reports from BMHP, warehouse, after submitting a proposal for procurement when inventory is running low, after it is submitted, the head of the pharmacy section will sort out the types of procurement and plan drug needs for each type of procurement and finally the head of the pharmacy section and support SDK Head with approval from the head of the Health Office Based on the explanation above it can be concluded that the needs planning process starts from the supplies coordinator making a compilation of uses with the last consumption method after being submitted to the head of the pharmaceutical installation, it will be determined to the type of procurement based on the planning needs made. So that it can separate purchases with e-Catalog and non-e-Catalog.

5. Ordering Medication

The drug ordering process is divided into two, namely ordering using e-Purchasing procedures based on e-Catalog and ordering using non-e-Purchasing or non-E-Catalog procedures. Ordering drugs using the e-Purchasing procedure is the main procedure that is established but there are a number of conditions that cause procurement officers to make purchases outside of e-Catalog, namely:

1) Drug items are not available on the e-Catalog portal
2) Not getting approval from drug provider e-Catalog
3) Long response from the drug provider
4) As well as late delivery from e-Catalog drug providers

This is based on interviews conducted with three informants, all three of which stated that the purchase of drugs can be done outside of e-Catalog if the officers find several obstacles:

"Purchases using the e-Catalog provide convenience for us, but not all the drugs we want to buy are in E-catalog so we buy them outside the E-Catalog we buy outside the E-Catalog and also choose the cheapest price and if the price can be the same as the drug in e-Catalog. In addition, sometimes there are also obstacles from the length of the agreement, drug delivery, sometimes also not approved by the provider, while the needs in the warehouse must be fulfilled immediately; we are forced to go outside E-catalogue" (MS, 40 years, 7 November 2018)

"This year the e-Catalog drug delivery is often too late so we have to buy it outside the e-Catalog so that our warehouse can be fulfilled, besides we also buy it outside the E-Catalog because not all drugs are in EE-Catalog" (ZA, 40 years, 14 November 2018). "We make purchases outside of e-Catalog if the drug we want to buy is not in e-Catalog but also see our needs if we have ordered the drug in e-Catalog but not sent while the drug is gone or empty we make purchases outside e-Catalogue to cover the availability of drugs in the warehouse" (SR, 38 years, October 24, 2018)

The process of ordering drugs outside the e-Purchasing method is carried out through a public auction conducted by
procurement officers by sorting the price of drugs that are cheap and close to the price of e-Catalog. Procurement officers will overtake drug items that have prices similar to e-Catalog by looking at the quality and expiration time of the drug. The auction process is carried out by procurement officials by looking at and searching for drug information in drug companies. Procurement officers can find information through the internet, via telephone, or distributors who often come to offer their products. The main obstacle in this auction is price, procurement officers look for prices that are close to e-Catalog or the same as e-Catalog prices but not many companies can afford it. This is based on the results of interviews with informants, informants said that buying outside of e-Catalog using auctions.

4. DISCUSSION

Procurement is one of the activities contained in the logistics management cycle. Procurement activities include planning and determining needs up to logistical receipts. (Irmawati, 2014). Procurement of drugs by E-Purchasing is one of the ways in the purchasing process that is determined by the government to meet the needs of health facilities, especially the Health Office in the need for quality and appropriate prices. At the Health Office, drug procurement activities are one of the parts of the pharmaceutical management cycle. Drug procurement activities at the Health Office are the responsibility of the pharmacy department of the Health Office (Permenkes, 2014). Procurement of drugs by E-Purchasing has been carried out by the Health Office since the regulation was issued, namely 2013 until now. To see how the implementation in hospitals is used the theory of Logic Models is seen from the input to the output of this e-Catalog program or policy. Input from the procurement of drugs in E-Purchasing is human resources, budget, procedures, facilities and infrastructure. The process of procuring drugs in an E-Purchasing manner starts from planning needs, ordering drugs, contractual agreements, and drug delivery. For the output of drug procurement by E-Purchasing itself is the availability of drugs at the Health Office.

4.1. Input Procurement of drugs by E-Purchasing

Input is input that needs to be provided or must be available to carry out an activity or process. Input plays an important role in a system. If the input is not available properly, it can inhibit activities that occur in the process of a system, it can even prevent a system from achieving its objectives. Drug procurement activities based on the Health Department e-Catalog must be able to provide inputs that support the activity process. Inputs from procurement of drugs in E-Purchasing are human resources, procedures, facilities and infrastructure. Human resources are a determining factor in achieving an organizational goal. Human resources are very important assets of an organization. The success of an organization can only be achieved if the rules or policies and procedures relating to humans from the organization are interconnected and contribute to the achievement of organizational goals (Hamid, 2014).

Human resources in the health sector or Health Human Resources are all people whose main activities are aimed at improving health. Health HR in the pharmaceutical field is divided into two classifications, namely pharmacy work, namely pharmacists and pharmacy technical personnel (Pharmacy Service Standards, 2014). The resources assigned to the drug procurement process at the Wondama Bay District Health Office are 8 people including APBN / The budget for 1 person, Manokwari Regency, consists of 9 people including 1 person in charge of the APBN / APBD and 1 Arfak Mountain Regency. The drug planner carried out by E-Purchasing itself consists of the head of the pharmacy section, assisted by pharmacy section staff and pharmaceutical installations. Availability of human resources related to
procurement of drugs in e-Purchasing can be seen from two aspects, namely quantity and quality.

Quantitatively the amount of resources possessed by the Health Office is still less related to the e-Purchasing process of drug procurement. The e-Purchasing officer has additional duties besides the main task in procuring drugs. More additional tasks will disrupt the performance of the officers, this was also found in the Ningsih (2013) study in his research at the Eye Health Service Dr. YAP Yogyakarta states that there is a relationship between workload and the performance of employees or health workers at the Health Office, the greater the workload the lower the performance. This study is also directly proportional to the research conducted by Suryaningrum (2015) that there is a relationship between workload and work stress of health workers or nurses in PKU Muhammadiyah General Hospital Yogyakarta. In addition, based on research conducted by Adyaksa (2015) that limited resources and resources that already have other tasks make the drug procurement team based on e-Catalog e-purchasing ineffective in carrying out the procurement process. The improvement and development of the quality of Health Human Resources owned by health agencies will be able to support the achievement of an effective and efficient health service in the JKN era (RI Health Human Resources Development Agency, 2013).

In quality, the resources owned by the Health Office have enough competence related to the procurement process of drugs that have had a pharmaceutical education background (Health Act No. 26 of 2009). Pharmaceutical work includes making, including controlling pharmaceutical supplies, planning, procuring, storing and distributing drugs must be carried out by health workers who have the expertise and authority in accordance with statutory provisions Quality. This resource can be seen by understanding work procedures that have been implemented in accordance with established procedures. Based on the pharmaceutical service standards in the Health Service in 2014, pharmaceutical installations must have pharmacists and pharmaceutical technical personnel in accordance with the workload and other supporting officers in order to achieve the goals and objectives of the pharmaceutical installation of the Health Office. The head of the pharmacy installation must be held by the Pharmacist and assisted by pharmaceutical technical personnel. Existing resources at the Health Department Pharmacy Installation when viewed from the quality are in accordance with these regulations by being headed by a Pharmacist and assisted by pharmaceutical technical personnel, while in quantity they are still lacking because the officer holding the assignment is an officer who has multiple assignments.

In this study looking at the budget of the amount of funds that are sufficient and the use of appropriate funds. For the amount of funds in the Health Office, it is sufficient for the implementation of the procurement of medicines e-Purchasing because the budget originating from two sources as well as the procurement officer does not experience a shortage of costs for purchasing drugs in e-Purchasing and this can also be seen from the amount of funds available which has earned all the funds needed, so the procurement process can run well. This is also in line with the results of research conducted by Afriadi (2005) and Ukai (2009) that the procurement of drugs that are running well gets support from several budget sources and precisely the arrival schedule of drugs.

In addition, the budget is also seen in terms of usage or use based on in-depth interviews conducted with several procurement officers. It is known that the utilization of funds has been maximally carried out. The budget provided has been used maximally for e-purchasing drugs. Work procedures for procuring drugs are made in general, namely for all procedures for purchasing both e-Purchasing and Non-
For planning drug procurement in e-Purchasing, it is done by separating purchases in e-Purchasing and non-e-Purchasing when planning is done the officer will look at the website to determine the number of drugs entered in e-Catalog. After knowing how many drugs to buy, the officer can make a purchase package after seeing in the e-Catalog what drugs are there, then separating the drugs that will be purchased in e-Purchasing and non-e-Purchasing. This is also in accordance with PMK No. 63 of 2014 that prior to ordering drugs, procurement officials will see a list of drugs in e-Catalog so they can determine the list of drug purchase packages based on e-purchasing e-purchasing. Based on the explanation above, it is known that the Health Office has implemented a drug requirement plan in accordance with PMK No. 63 of 2014 and Pharmacy Service Standards at the Health Office, namely by using one method between Consumption, Epidemiology, a combination of consumption methods and epidemiology and adjusted to the budget provided. This planning method is also used for all ways to purchase either e-Purchasing or Non-e-Purchasing.

Planning using the Consumption method is indeed one of the ways in the Pharmacy service standard, but for the purpose of self-planning this method is still not appropriately used, because there are still drug vacancies in the Health Office. This was also found in research conducted by Rahmawati (2015) and Badarudin (2015) that planning procurement of drugs using consumption methods was not in accordance with needs and could not be used as a basis for the study of drug use so that there was often a shortage of drug stocks in the Pharmacy warehouse. In a study conducted by Istawanah (2006), it was shown that failure in planning drug needs could be resulting in a stockpile of medicine at the Health Office. This is also in accordance with the research conducted by Yulistiani (2014) regarding the analysis of drug needs in Pahuwato Regional
Hospital, stating that the inaccuracy in determining the type of drug and the stock void is due to the weak planning process of drug needs at the Health Office. This shows the importance of the process of planning drug needs in supporting the availability of a number of drugs in health.

Based on the explanation above, it is known that the Health Office has been planning drug needs using one of the methods available at the 2014 Pharmaceutical Services Standard, but the planning carried out by planning officers is still not in accordance with the purpose of planning drug needs, namely avoiding emptiness drug.

The drug ordering process is a step in purchasing drugs after planning the drug before, in the process of ordering the procurement officer must also consider the aspects of the distributor / seller, as well as the location of the seller, so that they can avoid long waiting times and get quality drugs. (Irmawati, 2014) After the issuance of e-Catalog based drug procurement policies by the government, the order ordering process can now be done by e-Purchasing, namely the procedure for purchasing goods / services in this case drugs through an electronic catalog system (PMK No. 63 of 2014).

Provider response to orders via e-Purchasing has been established in the new umbrella contract that the length of response responds to e-purchasing orders at the latest 7 Calendar days (Sosialiane, 2015). In the order process carried out by the Health Service, it is known that the procurement often gets a slow response from the provider; sometimes in one purchase can wait for a response from the provider more than 7 days. Delay in response from the provider can actually be penalized because it does not respond to orders through e-Purchasing, this sanction can be a written warning (SP1, SP2). And if this SP is not followed up, the provider of goods / services is subject to 5% of the order / transaction value (Hukomas Setdijen, 2015). The application of these sanctions has not yet been implemented because there has been no follow-up on the non-compliance of these drug providers at the Health Office. This long response from this provider made the Health Office have to purchase drugs outside of e-Catalog in order to be able to fulfill the needs at the Health Office. Compliance with drug providers or distributors in e-Catalog based drug procurement regulations is indeed still very low, this is seen by the frequency of the distributors not applying the rules that have been set. This was also found in the evaluation of the implementation of the procurement of drugs based on E-catalogue in 2014 and 2015 by the Directorate of Public Medicine Development and Health supplies, which are still found by complaints from the Health Office on the slow response from drug providers, not only that there are also complaints about the fulfillment of drugs that are not compliant with the drug providers (Directorate of public medicine development and health solutions, 2016; Tanan.et.al., 2019, Weya. et.al. 2018).

Based on the explanation above, it is known that the Health Office has implemented a drug ordering process in e-Purchasing and Non-e-Purchasing in accordance with PMK No. 63 concerning Procurement of drugs based on e-Catalog in e-Purchasing, But when ordering drugs that are carried out it is often late because there is no information system that gives a warning if the drug has entered the minimum amount. Contracts or also often referred to as agreements are agreements between various parties that will be affected by the law (Abrams, 2008). The form of an agreement is made in writing (contract), one of which is the signing of the signatures of the parties involved in the agreement. Signatures, besides functioning as a form of agreement, also as a form of agreement on the place, time and content of the agreement made (Wicksonso, Frans Satrio, 2008).

Contract Agreement in e-Catalog procurement in e-Purchasing is a written agreement between the buyer and seller in
this case between the PPK and the goods / service provider or self-managing implementer. Contract agreements are made to make agreements between the two parties so that between the two parties must comply with the agreement that has been made together. The contract agreement in the procurement of Pharmacy was conducted for (PMK No. 63 of 2014).

The contract agreement process carried out by the Commitment Making Officer in Manokwari Regency, Teluk Wondama starts from the previous E-Purchasing process, after which the PPK (buyer) downloads the procurement contract format and contracts with the work distributor / executor appointed by the provider. The agreement that already exists in the sample format contract can be added or reduced in accordance with the agreement agreed between the PPK (buyer) and the distributor / executor of the work. Based on the explanation above, it is known that the contract agreement process carried out is in accordance with the technical instructions and refers to Republic of Indonesia Minister of Health Regulation No. 58 of 2014 concerning the procurement of drugs based on e-Catalog.

This extension of time made the warehouse have to submit another request proposal because to anticipate the drug vacuum in the warehouse, and with this time delay resulted in incompatibility with the plans made. Obstacles in the long waiting time were also obtained in one of the obstacles in the availability of drugs in the JKN era: E-catalogue medicine in 2013-2015 one of the obstacles was a long waiting time (Engko, 2016; Shanti, et.al. 2018). According Ansari (2009) the delay in delivering goods by suppliers is one of the problems that often arise in the process of procuring drugs which results in a drug vacuum. This is also in line with research conducted by Adyaksa in Denpasar city that the distribution of drugs had experienced delays and the realization of the drug did not reach 100%.

Based on the explanation above, it is known that the availability of drugs in Manokwari Regency, Wondama Bay is not yet in accordance with the indicators set by the Director General of Pharmaceutical and Medical Devices 2010. The cause of this vacancy is the delay in ordering applications because there is no information system that can warn if drugs has entered the minimum stock, besides that there are also obstacles from not fulfilling the number of drugs by e-Purchasing by distributors, the extension of the time of drug delivery, and there has been a national drug vacuum.

5. CONCLUSIONS

1. E-Purchasing human resource input in the Teluk Wondama District and Manokwari District Health Offices in the number of pharmacy staff is sufficient and the quality or educational background is sufficient to process e-purchasing drugs while in Arfak Mountains District has not been implemented because limited human resources and supporting infrastructure.


3. The input of the availability of facilities and infrastructure is sufficient to support e-Purchasing process of drug procurement except in the District Health Office of Arfak Mountains because there is no electricity and internet network.

4. The process of planning drug needs based on e-Catalog in e-Purchasing is in accordance with PMK No. 63 of 2014 and Pharmaceutical Service Standard No. 58 of 2014 but still unable to avoid a drug vacuum.

5. The process of ordering drugs by e-Purchasing and Non-e-purchasing is in accordance with PMK No. 63 of 2014, but the order time not in accordance with the 2014 Pharmaceutical Service Standards through the process of drug contract agreement in e-Purchasing.

6. The process of distribution or delivery of drugs in e-Purchasing at in Manokwari Regency, Wondama Bay based on the
number, type and time of delivery, according to the contract made. There are obstacles in the form of contract changes (addendum) related to the delivery time.

7. The availability of e-Catalog based drugs in e-Purchasing in warehouses is not in accordance with the indicators set by the Director General of Pharmacy and Health Equipment 2010, which are as many as 8 types of empty stock medicines and 4 types of drugs that have almost depleted stocks. The drug emptiness is caused by the number of drugs that are not all realized, when drug delivery by distributors, drug vacancies have occurred nationwide, and the absence of an information system that can warn the number of drugs entering the minimum stock, so that the booking is not too late.

REFERENCES
Amiluddin et.al. Analysis of E-Catalogue Drug Procurement with E-Purchasing Method in Papua Barat Province

• Peraturan Menteri Kesehatan Republik Indonesia Nomor 63 tahun 2014 tentang pengadaan obat berdasarkan kataog elektronik.
• Permenkes RI No 58 tentang Standar pelayanan Farmasi di Dinas Kesehatan tahun 2014


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Study of Total Children Ever Born in Ever Married Women of India: Regression Approach

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ABSTRACT

Background: India is a developing country: facing problems of populations. The reasons for this population blast are poverty, unemployment and also pollution. General need for family planning for females as well as male. We are focusing on controlling birth rate in Ever Married Women (EMW) and factors affecting fertility

Aim: To Fit a regression model on total children ever born and assess the factors affecting for fertility in ever married women’s of India.

Objective: To find out the auto correlation between total children ever born and demographic variable

Method: A community based cross sectional retro prospective study was conducted on urban and rural area. Only ever married women were enrolled. Results: Out of 89498 women mean of total children’s ever born (3.00 ±2.225). Durbin-Watson d statistics was 1.857. The difference between observed value of TCEB and predicated value TCEB that is $R^2 = 0.532$

Conclusion: We can concluded that, Fitted of regression model on total children ever born having sixty percentage variation from chosen demographic variables. In a real life controlling birth rate we focus on TCEB in EMW. These implementations to be need full for society.

Keywords: - Ever Married Women, Total Children Ever Born

INTRODUCTION

India is a developing country as part of a developing country; India has to facing problems of populations. The recent population of India is about 133.92 crores. India currently faces approximately “33 births per a minute, 2,000 an hour, 48,000 a day, which calculates to nearly 12 million a year”. Regrettably, the resources do not increase as the population increases. The reasons for increasing population are poverty, traditions, cultural norms, reduces death rate migration and also batter medical facilities respectively. [1]

The high-fertility or larger population countries waiting in many development. Their rate of progress toward development was very low as compare to the other country. [2] Many Tradition in a society developed high fertility. Children’s facing in his or her upcoming life bunch of problems. Because of less knowledge of parents about family planning. Marriage is early and common, and it is a viewed as a scandal for a couple, particularly for the wife, not to have children. High fertility is desired because by producing children, preferably sons, a woman raises her status in the family. [3]

There are some variables affecting on TCEB such as urban-rural residence, educational status, economic status, occupational groups, employment of women, religion, respectively. In 1971 at Korea, conducted Fertility-Abortion Survey. The Mass media variables are frequently used in fertility studies. They getting more information from Mass media about the TCEB. However, newspaper readership was the only variable on exposure to mass media included in the 1971 Korea Fertility-Abortion Survey. Government family planning programs in which frequency of home visits received, attendance at group meetings, and visits to health centers. [4]
Common peoples think about to providing good health for his Child . Therefore day by day increases acceptance of birth control methods. Fertility deadening up on Economic development, improvements in literacy and a better employment situation. To improve the quality of life lead to berth rate reduction. [5] Child marriage or arel age marriage long established tradition in India with poverty and ignorance magnifying the problem. [6]

In Latin America conducted study in which high fertility rates or TCEB seen at early ages of Women, they have been some response. According to Villareal (1998), only Cuba, Uruguay and Argentina, where fertility rates began changing before they 1. Although there is considerable debate in the literature about the meaning and definition of adolescence in contemporary society.

Most of the important factors to reduces birth rate in which to changes in marriage pattern that is intercast marriage pattern are to be improved as camper to the in between cast marriage, we are trying to improving use contraceptives methods. [7,8] The availability of contraceptives and extension of services accessible through family planning programme conducted by state governments as well as central [9-11] Up communing days general need for village adoption for controlling birth rate. In this study we are trying to fitting of regression model based on demographic variables. [12-15]

MATERIALS AND METHODS

A community based cross sectional study was conducted on urban and rural area. We include ever married women. The participants were approached and asked they are willing to enrolling to the study. In this study we analyzed factors affected on total children ever born in ever married women, collected data in the form of the secondary sources. We had taken data from International Institute of Population Sciences (IIPS) Mumbai. Here we used the data National Family Health Survey (NFHS-1) with taking permission for statistical analysis. We analyze an important component. Under the guidance’s of Population research Centers (PRCs) in India.

Statistical Methods:-

Data were tabulated and analysed using statistical package for social sciences (SPSS) version 20. The results were expressed in terms of Descriptive Statistics and fitted regression model expressed in the terms $R^2$ value. Durbin-Watson d statistics was used to find out the autocorrelation. Significances of differences calculated with students t test. Corresponding p value ie (p<0.005) was considered for statistical significances.

RESULTS

Total 89498 women enrolled in this study in NFHS face One . Total study population was classify according to current age and total children ever born, Number of household members, standard of living index, religions respectively. There are many reasons such as current age, level of education, cast, place of residency etc.

The total number of children born some factors affecting such as, no of death cases with mean and SD (6.27±4.670), Current age of respondent (30.87± 8.8), Number of child deaths (-6.27±4.6), Number of household members (5.81±2.9), Literate, < middle school complete woman (0.20±0.399) respectively. We analyzes that, the different cast, place of residency, level of Education having diffract means and also diffract SD. Please of residency factors was also important.
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Table No:-2 Fitting of Regression Model on Demographic Variable

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<td>Number of child deaths</td>
<td>.174</td>
<td>.001</td>
<td>.365</td>
<td>147.966</td>
<td>[.000, .172, .176]</td>
</tr>
<tr>
<td>Number of household members</td>
<td>.003</td>
<td>.002</td>
<td>.003</td>
<td>1.482</td>
<td>[.138, -.001, .006]</td>
</tr>
<tr>
<td>Literate, &lt; middle school complete woman</td>
<td>-.269</td>
<td>.014</td>
<td>-.048</td>
<td>-19.695</td>
<td>[.000, -0.296, -0.242]</td>
</tr>
<tr>
<td>Middle school complete woman</td>
<td>-.529</td>
<td>.019</td>
<td>-.066</td>
<td>27.408</td>
<td>[.000, -0.567, -0.491]</td>
</tr>
<tr>
<td>High school complete and above woman</td>
<td>-1.013</td>
<td>.016</td>
<td>-.159</td>
<td>-64.118</td>
<td>[.000, -1.044, -0.982]</td>
</tr>
<tr>
<td>standard of living index is medium</td>
<td>-.016</td>
<td>.011</td>
<td>-.003</td>
<td>-1.349</td>
<td>[.177, -.038, .007]</td>
</tr>
<tr>
<td>standard of living index is high</td>
<td>-.073</td>
<td>.015</td>
<td>-.012</td>
<td>-4.927</td>
<td>[.000, -.102, -.044]</td>
</tr>
<tr>
<td>woman from Sikh</td>
<td>-.006</td>
<td>.031</td>
<td>.000</td>
<td>2.011</td>
<td>[.840, .066, .054]</td>
</tr>
<tr>
<td>woman from Buddhist and Jewish</td>
<td>-.200</td>
<td>.068</td>
<td>-.007</td>
<td>2.940</td>
<td>[.003, .067, .333]</td>
</tr>
<tr>
<td>woman from Christian</td>
<td>-.118</td>
<td>.021</td>
<td>-.013</td>
<td>-5.558</td>
<td>[.000, -.160, -.077]</td>
</tr>
<tr>
<td>woman from Muslim</td>
<td>-.009</td>
<td>.017</td>
<td>-.001</td>
<td>-5.29</td>
<td>[.597, -.042, .024]</td>
</tr>
<tr>
<td>woman from other category</td>
<td>-.057</td>
<td>.049</td>
<td>-.003</td>
<td>-1.178</td>
<td>[.239, -.133, .038]</td>
</tr>
<tr>
<td>woman from Rural</td>
<td>.016</td>
<td>.011</td>
<td>.003</td>
<td>1.445</td>
<td>[.149, -.006, .038]</td>
</tr>
</tbody>
</table>

Fitted Model:

\[ Y: \text{Total Children Ever Born (alive + dead)} \]
\[ = 0.584X_1 + 0.123X_2 + 0.003X_3 - 0.269D_{d,v,edu_1} - 0.529D_{d,v,edu_2} \]
\[ - 1.013D_{d,w,edu_3} + 0.16D_{d,type} - 0.16D_{d,sl_1} - 0.073D_{d,sl_2} - 0.006D_{d,re_1} \]
\[ + 0.2D_{d,re_2} - 0.118D_{d,re_3} - 0.009D_{d,re_4} - 0.057D_{d,re_5} \]

Table 3: Model Statistics

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R Change</td>
<td>F Change</td>
<td>df1</td>
<td>df2</td>
<td>Sig. F</td>
<td>F Change</td>
</tr>
<tr>
<td>1</td>
<td>.730</td>
<td>.532</td>
<td>.532</td>
<td>1.522</td>
<td>532</td>
<td>7186.468</td>
</tr>
</tbody>
</table>

Above table in which Predictors: (Constant), woman from Rural, Number of child deaths, standard of living index is medium, woman from Buddhist and Jewish, Number of household members, woman from other category, woman from Sikh, woman from Christian, woman from Muslim, Middle school complete woman, Literate, < middle school complete woman, Current age of respondent, standard of living index is high, High school complete and above woman etc.

In the above table value of Durbin-Watson D statistics \(^7\) was 1.857 which was close to 2. That is show that the autocorrelation is not present in the model since the f value was 7186.468 corresponding p value 0.000(<0.005). Hence we can conclude that model was significant. TCEB is taken as a dependent variable. The correlation of all study variables was positive that is 0.73. In fitted model in which we find \(R^2 = 0.532\) indicates that the fitted model explains 60% variation in TCEB.

**DISCUSSION**

How to control of growth of population has been a reason of lose sleep for the Government of India since a very long time. Hear we can try to find out the relation of total children’s ever born and some demographic variable. We use the multinomial logistic regression analysis try to fitting statistical modelling. The correlation between the demographic variable was positive. The TCEB subject to various inhibiting biological and behavioral factors all traditional societies. Birth control some factors affecting modern life styles, use of contraceptive methods Infertility etc. General we can say that, increase in natural fertility associated with early modernization. Current age of respondent, number of child deaths, standard of living
index, place of residency, level of Education factors affecting on the TCEB.

CONCLUSION
Fitted regression model suggest sixty percentage variations from the demographic variable. We can realize that, implementations to be need full about the TCEB to reduce population in EMW.

Sources of Funding: - Nil
Conflict of Interest - Nil

REFERENCES

Healthcare Quality under the National Health Insurance Scheme: A Study among Patients at a Tertiary Health Institution in Nigeria

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\textsuperscript{2}Department of Paediatrics, University of Abuja Teaching Hospital, Gwagwalada, Abuja-FCT, Nigeria.  
\textsuperscript{3}Department of Community Health and Primary Health Care, Lagos State University Teaching Hospital, Ikeja, Lagos, Nigeria  
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Corresponding Author: Daramola O.E

ABSTRACT

\textbf{Background:} The National Health Insurance Scheme (NHIS) provides health services through accredited healthcare facilities, and studies have shown mixed perceptions about the quality of accessed services, with some enrollees commending it and several others adjudging it poor.  

\textbf{Objective:} This study was to determine patients’ satisfaction with the quality of care under the NHIS and identify reasons for dissatisfaction in a tertiary healthcare institution in the Federal Capital Territory (FCT) Abuja, Nigeria.

\textbf{Methodology:} A cross-sectional study was conducted among NHIS patients attending the General Outpatient Department at the University of Abuja Teaching Hospital, Gwagwalada, FCT - Abuja, Nigeria in July, 2018. Data were collected from 305 patients selected by systematic random sampling; using pretested, structured, interviewer-administered questionnaires with each satisfaction area scored in a five-point Likert scale ordinal response. The questionnaire contained information on sociodemographic characteristics and accessed services. Data analysis was done using IBM SPSS Statistics 20.0.

\textbf{Results:} The overall mean satisfaction score was 68.6±12.5. The major causes of dissatisfaction were: long registration processes, poor card retrieval, long waiting time, short doctor’s consultation, long time taken to get laboratory test results and unavailability of prescribed drugs.

\textbf{Conclusion:} The study revealed a good satisfaction level with services accessed under the NHIS in this tertiary health institution. Several causes of dissatisfaction were also given and it is essential to address these, as dissatisfaction could influence negatively patients’ health seeking behaviour, discourage utilization and result in attrition; with the attendant adverse effects on the attainment of the NHIS goals and objectives.

\textbf{Key words:} Healthcare; Quality; Patients; Satisfaction; health insurance; Nigeria.

INTRODUCTION

The vision of making quality healthcare accessible and affordable to the Nigerian population necessitated the establishment of the National Health Insurance Scheme (NHIS) by the Federal Republic of Nigeria.\textsuperscript{[1]} Health insurance is a healthcare financing system through various prepayment modes, offering financial protection and ensuring that the cost of healthcare does not put financial burden on the beneficiaries.

Health insurance is a veritable tool towards the attainment of universal health coverage, \textsuperscript{[2]} and it is a common strategy adopted by governments in many nations; establishing a compulsory social health insurance scheme for workers in the formal sector, and simultaneously promoting voluntary schemes for those working in the informal sector.\textsuperscript{[3]}

The provision of qualitative healthcare services through accredited healthcare facilities is one of the objectives...
of the NHIS, and studies have shown mixed perceptions about the quality of services under the scheme, with some enrollees commending it and several others adjudging it poor. \[4-7\] Studies have reported poor services, dissatisfaction with hospital bureaucracy with obtaining cards, cumbersomeness of NHIS registration process, lack of prescribed drugs, long waiting time and poor attitude of health workers. \[5-10\]

The Nigerian health system is still majorly characterized by out-of-pocket expenditures, as only a few percentage of the population (mainly Federal civil/public servants) are being covered under the NHIS. While the process of increasing coverage and moving toward Universal Health Coverage is ongoing, it is essential to continue evaluating the perception of the beneficiaries towards continuous improvement of the quality of services.

The quality of services accessed by the patients has been one of the focal areas since the inception of the NHIS, and many studies have used patients’ satisfaction as an indicator of the evaluation of the quality of care. \[1,5,7,11\] Patient satisfaction is the patient’s opinion about the care received. Patients are the focal point of health services; hence the importance of incorporating their perspectives in the evaluation of health care systems cannot be overemphasized.

According to Donabedian’s declaration, “patient satisfaction is an expression of patient’s judgment on the quality of care in all its aspects…” \[12\] It is one of the main indicators of patient experience about health care services and quality of care provided in different areas of health care; including technical, interpersonal, and organizational aspects. \[13-15\]

Evaluating feedbacks from patients about satisfaction with the quality of services accessed, and reasons for dissatisfaction can be used as an important process in identifying service gaps, improving quality and developing patient-centered care.

This study assessed the level of patients’ satisfaction with the quality of care under the NHIS and reasons for dissatisfaction in a tertiary healthcare facility in Federal Capital Territory (FCT) Abuja, Nigeria. It will contribute to the delivery of evidence-based information which can be used by stakeholders and policy makers to prioritise appropriate interventions required towards addressing reasons for patients’ dissatisfaction and improving the quality of services and in the study area and other similar settings.

**MATERIALS AND METHODS**

The University of Abuja Teaching Hospital, located in Gwagwalada in the Federal Capital Territory of Nigeria is a 350 bed health facility with capacity for expansion to 500 beds. It was established in 1992 as a specialist hospital and transformed to a Federal Medical Centre in 1993 following its transfer to the Federal Ministry of Health. It was later upgraded to a Teaching Hospital for the University of Abuja in September 2006. \[16\]

Gwagwalada is one of the six Local Government Area Councils of the Federal Capital Territory of Nigeria, and it is also the main town in the LGA with an area of 1,043 km² and a population of 157,770 at the 2006 census and a current population of about one million people. \[17\]

A descriptive cross-sectional study was carried out among NHIS patients attending the General Outpatient Clinic of the hospital in July 2018, with a sample size of 305 determined using the Fishers’ formula \(z_2pq/d^2\). \[13,18\]

NHIS patients above the age of 18 years, who were willing to participate in the study and have accessed care in the hospital not less than two previous occasions, were interviewed at the General Outpatient Clinic. Patients younger than 18 years, acutely ill looking patients and those requiring urgent attention were excluded from the study.
A systematic random technique was used to select patients. Sampling frame was determined using records from the General Outpatient Clinic, which showed that an average of about NHIS 1000 patients was seen monthly. The study period was one month, hence the sampling frame was 1000 and a sampling interval of 3 used in selecting patients, with the index patient selected by simple random sampling.

Ethical approval for the study was obtained from the Ethical Committee of University of Abuja Teaching Hospital. Participation was fully voluntary, confidentiality and anonymity assured, and written informed consent obtained from the participants.

STATISTICAL METHODS

Data were collected using pretested, structured, interviewer-administered questionnaires designed by the researchers using information from literature review and previous similar studies on patients’ satisfaction. [11-15] The questionnaire contained information on basic demographic variables and satisfaction in areas of care such as: hospital reception/patient registration process, waiting time, medical consultation, nursing care, availability of prescribed drugs, laboratory services, hospital facilities and respondents’ reasons for dissatisfaction with the assessed areas. Each satisfaction item was scored on a 5-point Likert scale with 1 and 5 indicating the lowest and highest levels of satisfaction respectively, as follows: Very satisfied = 5 points/100%, Satisfied = 4 points/80%, Neutral = 3 points/60%, Dissatisfied = 2 points/40%, and Very dissatisfied = 1 point/20%, with the following operational percentage range definitions: excellent (90%-100%), very good (70%-89%), good (50%-69%), fair (30%-49%), and poor (0%-29%). [8]

Data analysis was done using IBM SPSS Statistics 20.0. Frequency tables and cross tabulations were generated and Chi-square test was used to determine statistical significance of observed differences in cross tabulated variables. Level of significance was set at p <0.05.

RESULTS

A total of 305 study participants were included in the study, with a mean age of 36 ± 10.2 years. There were 133 (43.6%) males and 172 (56.4%) females. Most of the participants were married 220 (72.1%) while 82 (26.9%) were single, 241(79.0%) had various forms of post-secondary/tertiary education. [Table 1]

The overall mean satisfaction score was 68.6%. Participants’ satisfaction in the various areas of services as follows; hospital reception/ registration process (67.2%), waiting time (59.5%), medical consultation (78.1%), laboratory Services (70.4%), prescribed drugs (61.2%) and Nursing Care (70.9%).[Table 2]

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency (n=305)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age group (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30</td>
<td>102</td>
<td>33.4</td>
</tr>
<tr>
<td>30-39</td>
<td>104</td>
<td>34.1</td>
</tr>
<tr>
<td>40-49</td>
<td>68</td>
<td>22.3</td>
</tr>
<tr>
<td>50-59</td>
<td>23</td>
<td>7.5</td>
</tr>
<tr>
<td>≥ 60</td>
<td>8</td>
<td>2.6</td>
</tr>
<tr>
<td>Mean: 36 ± 10.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>133</td>
<td>43.6</td>
</tr>
<tr>
<td>Female</td>
<td>172</td>
<td>56.4</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>82</td>
<td>26.9</td>
</tr>
<tr>
<td>Married</td>
<td>220</td>
<td>72.1</td>
</tr>
<tr>
<td>Divorced</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>Widowed</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christianity</td>
<td>223</td>
<td>73.1</td>
</tr>
<tr>
<td>Islam</td>
<td>80</td>
<td>26.2</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>Primary</td>
<td>14</td>
<td>4.6</td>
</tr>
<tr>
<td>Secondary</td>
<td>50</td>
<td>16.4</td>
</tr>
<tr>
<td>Post-Secondary/Tertiary</td>
<td>241</td>
<td>79.0</td>
</tr>
</tbody>
</table>

Table 2: Level of satisfaction with various aspects of services

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>MEAN SCORE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Reception/Registration</td>
<td>67.2±21.0</td>
</tr>
<tr>
<td>Waiting time</td>
<td>59.5±22.9</td>
</tr>
<tr>
<td>Medical Consultation</td>
<td>78.1±20.3</td>
</tr>
<tr>
<td>Laboratory Services</td>
<td>70.4±21.3</td>
</tr>
<tr>
<td>Prescribed drugs</td>
<td>61.3±23.4</td>
</tr>
<tr>
<td>Nursing Services</td>
<td>70.8±19.4</td>
</tr>
<tr>
<td>Overall Mean Score</td>
<td>68.6±12.5</td>
</tr>
</tbody>
</table>

Those that indicated reasons for dissatisfaction with the reception/registration process were 92; majority 53 (57.6%) and 48 (52.2%) were dissatisfied due to long
registration processes and poor card retrieval, while 24 (26.1%) expressed unfriendly hospital staff as their reason for dissatisfaction [Table 3].

Long waiting time 110 (82.7%) accounted for the main reason for dissatisfaction with waiting time. Out of the 37 respondents who gave reasons dissatisfaction with doctors’ consultation, close to half, 18 (48.6%) indicated short doctor’s consultation as their reason for dissatisfaction. Non-availability of drugs 84 (81.6%) was the main reason for dissatisfaction with prescribed drugs. Sixty-one (61) participants stated reasons for dissatisfaction with the laboratory services, close to half 29 (47.5%) complained about the long time taken to get results of laboratory tests. [Table 3]

Fifty-two participants stated reasons for dissatisfaction with nursing care; out of which 25 (48.1%) were due to inadequate availability of drugs 84 (70.6%) was the main reason for dissatisfaction. Non-availability of drugs 84 (70.6%) was the main reason for dissatisfaction with laboratory services, close to half 29 (47.5%) complained about the long time taken to get results of laboratory tests. [Table 3]

Younger people, females, those married and respondents with lower education reported high level of satisfaction; all with no statistically significant differences. (p values: 0.84, 0.45, 0.98 & 0.82 respectively) [Table 4].

Table 3: Distribution of respondents by reasons of dissatisfaction

<table>
<thead>
<tr>
<th>Reasons for dissatisfaction</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reception/Registration N= 92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unfriendly Staff</td>
<td>24</td>
<td>26.1</td>
</tr>
<tr>
<td>Long registration process</td>
<td>53</td>
<td>57.6</td>
</tr>
<tr>
<td>Poor medical records/Card retrieval</td>
<td>48</td>
<td>52.2</td>
</tr>
<tr>
<td>Waiting time N= 135</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long Queue and waiting time</td>
<td>11</td>
<td>082.7</td>
</tr>
<tr>
<td>No orderliness on queue</td>
<td>24</td>
<td>18.0</td>
</tr>
<tr>
<td>Partiality in attending to patients</td>
<td>29</td>
<td>21.8</td>
</tr>
<tr>
<td>Sitting area (facilities) not conducive</td>
<td>16</td>
<td>12.0</td>
</tr>
<tr>
<td>Doctors’ Consultation N= 37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctor unfriendly</td>
<td>5</td>
<td>13.5</td>
</tr>
<tr>
<td>Consultation time too short</td>
<td>18</td>
<td>48.6</td>
</tr>
<tr>
<td>Not given adequate attention</td>
<td>13</td>
<td>35.1</td>
</tr>
<tr>
<td>Not allowed to explain myself well</td>
<td>4</td>
<td>10.8</td>
</tr>
<tr>
<td>Poor communication of medical condition</td>
<td>8</td>
<td>21.6</td>
</tr>
<tr>
<td>Prescribed Drugs N=103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unfriendly staff</td>
<td>14</td>
<td>13.6</td>
</tr>
<tr>
<td>Prescribed drugs not available</td>
<td>84</td>
<td>81.6</td>
</tr>
<tr>
<td>Prescribed drugs not effective</td>
<td>17</td>
<td>16.5</td>
</tr>
<tr>
<td>Asked to pay &gt; 10% copayment of drug cost</td>
<td>15</td>
<td>14.6</td>
</tr>
<tr>
<td>Asked to pay for covered drugs</td>
<td>15</td>
<td>14.6</td>
</tr>
<tr>
<td>Laboratory Services N= 61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unfriendly staff</td>
<td>15</td>
<td>26.4</td>
</tr>
<tr>
<td>Waiting time before being attended to too long</td>
<td>29</td>
<td>47.5</td>
</tr>
<tr>
<td>Time taken to get results long</td>
<td>26</td>
<td>42.6</td>
</tr>
<tr>
<td>Asked to pay for investigations</td>
<td>16</td>
<td>26.2</td>
</tr>
<tr>
<td>Nursing Care N= 52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UnfriendlyNurse</td>
<td>19</td>
<td>36.5</td>
</tr>
<tr>
<td>Not given adequate attention</td>
<td>25</td>
<td>48.1</td>
</tr>
<tr>
<td>Waited long before being attended to</td>
<td>20</td>
<td>38.5</td>
</tr>
</tbody>
</table>

Table 4: Satisfaction score with NHIS by socio-demographic characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Satisfied</th>
<th>Dissatisfied</th>
<th>Neutral</th>
<th>( \chi^2 )</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age group (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30</td>
<td>65(67.7)</td>
<td>3(3.1)</td>
<td>28(29.2)</td>
<td>13.91</td>
<td>0.84</td>
</tr>
<tr>
<td>30-39</td>
<td>76(69.1)</td>
<td>8(7.3)</td>
<td>26(23.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>53(77.9)</td>
<td>4(5.9)</td>
<td>11(16.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-59</td>
<td>14(66.9)</td>
<td>4(17.4)</td>
<td>5(21.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 60</td>
<td>4(50.0)</td>
<td>2(25.0)</td>
<td>5(25.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>212(69.5)</td>
<td>21(6.9)</td>
<td>72(23.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>88(66.2)</td>
<td>9(6.8)</td>
<td>36(27.1)</td>
<td>1.58</td>
<td>0.45</td>
</tr>
<tr>
<td>Female</td>
<td>124(72.1)</td>
<td>12(7.0)</td>
<td>36(20.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>212(69.5)</td>
<td>21(6.9)</td>
<td>72(23.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>56(69.1)</td>
<td>6(7.4)</td>
<td>19(23.5)</td>
<td>0.81</td>
<td>0.98</td>
</tr>
<tr>
<td>Married</td>
<td>152(69.1)</td>
<td>15(6.8)</td>
<td>53(24.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>2(100.0)</td>
<td>0(0.0)</td>
<td>0(0.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>2(100.0)</td>
<td>0(0.0)</td>
<td>0(0.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>212(69.5)</td>
<td>21(6.9)</td>
<td>72(23.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>83(68.0)</td>
<td>8(6.6)</td>
<td>31(25.4)</td>
<td>1.49</td>
<td>0.82</td>
</tr>
<tr>
<td>Secondary</td>
<td>84(70.6)</td>
<td>10(8.4)</td>
<td>25(21.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Secondary/Tertiary</td>
<td>45(70.3)</td>
<td>3(4.7)</td>
<td>16(25.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>212(69.3)</td>
<td>21(6.9)</td>
<td>72(23.6)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

The overall mean satisfaction was 68.6% with satisfied services in the General Out-patient department of the hospital, with various levels of satisfaction in the different aspects services accessed. Patients get the first impression of a healthcare facility at the point of entry, usually the registration
and health records section. Long registration processes and poor card retrieval accounted for 57.6% & 52.2% respectively of the reasons given by the majority respondents who were dissatisfied with the registration process. A study at Umuahia, South-Eastern Nigeria reported that patients were not satisfied with the hospital bureaucracy starting with obtaining cards. Another study in Ibadan, Southwest Nigeria reported that one of the foremost factors hindering effective utilization of NHIS is the poor registration process. Many respondents who reported reasons for dissatisfaction with the waiting time complained of long waiting before medical consultation. Long waiting time could be attributed to the large number of patients accessing care in the healthcare facility. Evidences from previous studies have also shown that long waiting time influences negatively the utilization of health services and when patients have to wait for a long time before being attended to, they are less likely to utilize health services. A strong and inverse relationship between patient satisfaction and waiting times in ambulatory care settings has also been reported and some studies have shown that reducing patient waiting time has positive impact on patient satisfaction. The three most common factors leading to long waiting time observed in a study in North Western Nigeria were high patient load, few doctors, and record clerks. About half (48.6%) of patients who reported dissatisfaction with doctor’s consultation complained that it was too short. This may be due to the large number of patients being attended to in relation to few numbers of available doctors. In most developing countries, there is shortage of medical doctors which may be due to the challenges of training, and then the migration of quite a number of the trained few to other countries in search of greener pastures. There is an imbalance of doctor–patient ratio and the need for the available doctors to attend to the huge number of patients would normally result in short consultation time, a short mean consultation time of about 3½ minutes was observed in a study with similar conditions in Malaysia.

About half (47.5%) of those dissatisfied with the laboratory services complained about the long time taken to get results of laboratory tests. This is similar to findings in Kano, North-West Nigeria. A study in Tanzania also reported that a significant proportion of patients who were dissatisfied with the laboratory services, complained about the waiting time and result notification. Non-availability of prescribed drugs as reported by majority (81.6%) of respondents accounted for the main reason among those who reported dissatisfaction with prescribed drugs. Availability of drugs has been a challenging issue in many healthcare facilities. A study in Ibadan, Southwest-Nigeria ranked non-availability of prescribed drugs as one of the leading factors hindering effective utilization of NHIS services. Studies have also reported non-availability of prescribed drugs to be the major complaint associated with lower satisfaction, and access to drugs one of the most suggested priorities for improvement of public health services.

The NHIS operational guidelines state that “health facilities shall stock generic drugs based on the NHIS Drugs List.” It is imperative therefore for the NHIS and HMOs to enforce compliance with the guideline, while also working with other relevant stakeholders such as NAFDAC to ensure drug quality. When medicines are not available, patients will have to go without the prescribed medications, look for means of purchasing them or go for alternative forms of treatment. Health facilities therefore should ensure the availability of drugs and use identified alternatives that can substitute for the unavailable drug should such occur.

CONCLUSION
This study revealed the level of satisfaction and reasons for dissatisfaction with services accessed under the National Health Insurance Scheme. It is therefore imperative for the NHIS to work with relevant stakeholders to ensure the effective and efficient utilization of the NHIS in order to improve patient satisfaction and reduce dissatisfaction with health facilities.
Health Insurance Scheme in this tertiary health institution. It is essential to address these reasons, as dissatisfaction could influence negatively patients’ health seeking behaviour, discourage utilization and result in attrition; with the attendant adverse effects on the attainment of the NHIS goals and objectives.

Stakeholders, especially the NHIS, HMOs and healthcare facilities need to ensure that reasons for dissatisfaction are addressed appropriately towards the delivery and sustainability of quality services.

Competing Interest
The authors declare no conflicts of interest or competing interests associated with this manuscript.

REFERENCES

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Use of Therapeutic Exercises in Type II Spinal Muscle Atrophy: A Case Report

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ABSTRACT

Spinal muscular atrophy (SMA) is a neuromuscular disorder characterized by degeneration of alpha motor neurons. This case report describes use of therapeutic exercise rehabilitation program with type II SMA. Motor skills were examined using the Goss Motor Functional Measures (GMFM)-88, Hammersmith Functional Motor Scale (HFMS) and Manual Muscle Testing (MMT) which are reliable. The child received Physical Therapy rehabilitation program on regular basis for 40-min sessions for 18 months. The intervention included various therapeutic exercises and it was designed to improve gross motor skills and age appropriate functional mobility. Improvement was seen in total score of total score of GMFM-88, HFMS and MMT by intervention given in this study. The outcomes of this case report demonstrated that, the successful improvement of gross motor functions and strength in muscles in 3-year-old child with type II SMA.

Keywords: SMA, Therapeutic exercises, GMFM-88, HFMS, MMT.

INTRODUCTION

Spinal Muscular Atrophy (SMA) is the commonest serious autosomal recessive disorder after cystic fibrosis. In 1890s this disease was first described by Werdnig and by Hoffmann. Incidence of SMA is 1 in 6,000 to 1 in 10,000 live births. [1] Spinal muscle atrophy is defined as a genetic disorder of the motor neurons in the anterior horns of the spinal cord resulting in degeneration of the spinal cord alpha motor neurons. [2] The cause of SMA is deletion or mutation of survival motor neuron 1 (SMN1) which encode the SMN protein. [3]

On the basis of age onset and achievement of motor functions SMA is classified into four types. [4]

Type I SMA is the most sever type and it is also known as Werdnig Hoffmann disease. Onset of disease occurs within six months after birth. These patients never achieve independent sitting. The lifespan of infants with SMA type I is less than 24 months without ventilator support. [3]

Type II SMA is an intermediate as well as less severe form. It is also known as Dubowitz disease. The onset of disease occurs between 6 months and 18 months of age. [2] Patients are able to sit independently and some of them are able to maintain standing position, but they are unable to walk independently. [1] They live up to adulthood age. [3]

Type III SMA is milder form and is also known as Kugelberg Welander disease. Type III SMA occurs after 18 months of age. The average lifespan of individuals dose not differ from the general population. [1]

The onset of SMA type IV is after 20 years of age. The symptoms of type IV disease gradually progress over numerous decades. [1]

SMA is identified by genetic testing in which deletions of the SMN-1 gene and EMG report shows denervation of muscles. [2] There are various outcome measures for SMA such as Motor Function Measure-32 (MFM), Gross Motor Functional Measures-88 (GMFM-88), Quantitative muscle
testing, Hammersmith Functional Motor Scale (HFMS), pulmonary function test, pedsQL etc.\textsuperscript{[4,5,6]}

Motor Function in children with type II SMA assessed by using GMFM-88 scale.\textsuperscript{[7]} The HFMS was modified for determination of functional ability in children with SMA and MMT is tool used to assess the strength of muscle.\textsuperscript{[2,8]}

**History:** This patient was 1 and half year old female brought to Pediatric Physiotherapy Department by mother with the medical diagnosis of Type II Spinal Muscular Atrophy. Her mother reported not as such any significant birth history or complications (full term normal vaginal delivery, immediate cry was present after birth, birth weight was 3000gm). Chief complaints were unable to coming to sitting from supine lying, unable to sit independently and weakness in bilateral upper and lower extremities but it was more prominently in lower extremities. Her gross motor development was delayed. She achieved neck control at the age of 6 months, rolling achieved at the age of 10 months. She did not received or attempt any physical therapy treatment session before this.

**Investigations:** Multiplex ligation-dependent probe amplification (MLPA) Testing for Spinal Muscular Atrophy (SMA) showed positive deletion of exon7 and 8 of SMN1 gene with the diagnosis of Spinal Muscular Atrophy likely SMA type II on the clinical presentation. EMG report showed that, chronic motor axon degeneration affecting proximal and distal upper limb and lower limb muscles. Site of lesion is likely to be at AHC level.

**Intervention:** After evaluation referred to orthotic and prosthetic department for orthosis and to genetic counselor for genetic counseling they are advised to come for regular Physiotherapy treatment. On the basis of problems list, short term and long term goals were planed. Initially Child was on Physiotherapy treatment session for 5 days per week for 45 minutes almost upto 2 and half years of her age was given.

**Treatment protocol:** First 6 months, session began with exercises on mat. Intervention included, passive range of motion (PROM) exercises to bilateral upper and lower limb, supine to sit facilitation from both sides, prone on elbow, prone on hand, sitting dissociation and combination of quadruped position and abdominal curl ups for core muscle strengthening. Then same exercises were progressed on Swiss ball. Treatment also included working on maintaining and tolerating sitting balance on wobble board, reach out exercises in sitting and the patient achieved sitting independently at the age of 2.

Same exercises were continued for maintenance and few more exercises were added. Session typically began with active assisted range of motion exercises (AAROM), Joint proprioception exercises to bilateral lower limb by giving NDT techniques like kneeling, half kneeling, pull to stand from floor, standing on one leg, stride standing, standing against ball with and without ankle foot orthosis (AFO). She achieved standing independently at 2.8 years of age.

After that, session would begin with active range of motion (AROM) and strengthening exercises with manual resistance to bilateral lower extremities, diaphragmatic breathing exercises. Initially walking started with the help of walker then it was progressed on treadmill and she was able to maintain standing position without support for 10 minutes. The current episode of care involves physical therapy rehabilitation sessions 3 days in each week and the duration of daily session is 40 minutes in which balance board exercises in standing, bilateral lower limb strengthening exercise, sit to stand, treadmill walking is included and also mother is advised to continued same exercises protocol at home daily.
RESULT

Table 1.1: Pre-Intervention and Post-Intervention scores of Gross Motor Function Measure-88 Scale.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>A (Lying &amp; Rolling)</th>
<th>B (Sitting)</th>
<th>C (Crawling &amp; Kneeling)</th>
<th>D (Standing)</th>
<th>E (Walking, Running &amp; Jumping)</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Intervention</td>
<td>56.8%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>11.36%</td>
</tr>
<tr>
<td>Post-Intervention</td>
<td>96.07%</td>
<td>98.33%</td>
<td>92.85%</td>
<td>41.02%</td>
<td>22.22%</td>
<td>70.09%</td>
</tr>
</tbody>
</table>

Graph 1.1: Pre-Intervention and Post-Intervention scores of Gross Motor Function Measure-88 Scale.

Table 1.2: Pre-Intervention and Post-Intervention scores of Hammersmith Functional Motor Scale.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Pre-Intervention score</th>
<th>Post-Intervention score</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/66</td>
<td>45/66</td>
<td></td>
</tr>
</tbody>
</table>

Graph 1.2: Pre-Intervention and Post-Intervention scores of Hammersmith Functional Motor Scale.

Table 1.3: Pre-Intervention and Post-Intervention grades of Manual Muscle Testing.

<table>
<thead>
<tr>
<th>Component</th>
<th>Pre-Intervention assessment</th>
<th>Post-Intervention assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexors</td>
<td>Grade 3</td>
<td>Grade 4</td>
</tr>
<tr>
<td>Extensors</td>
<td>Grade 3</td>
<td>Grade 4</td>
</tr>
<tr>
<td>ABDuctors</td>
<td>Grade 1</td>
<td>Grade 3</td>
</tr>
<tr>
<td>Adductors</td>
<td>Grade 2</td>
<td>Grade 3</td>
</tr>
<tr>
<td>Internal rotators</td>
<td>Grade 1</td>
<td>Grade 3</td>
</tr>
<tr>
<td>External rotators</td>
<td>Grade 1</td>
<td>Grade 3</td>
</tr>
<tr>
<td>Knee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexors</td>
<td>Grade 3</td>
<td>Grade 4</td>
</tr>
<tr>
<td>Extensors</td>
<td>Grade 3</td>
<td>Grade 4</td>
</tr>
<tr>
<td>Ankle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plantar flexors</td>
<td>Grade 1</td>
<td>Grade 3</td>
</tr>
<tr>
<td>Dorsiflexors</td>
<td>Grade 1</td>
<td>Grade 3</td>
</tr>
<tr>
<td>Invertors</td>
<td>Grade 1</td>
<td>Grade 3</td>
</tr>
<tr>
<td>Evertors</td>
<td>Grade 1</td>
<td>Grade 3</td>
</tr>
</tbody>
</table>

DISCUSSION

The purpose of study was to see the development in patient with type II SMA over a period of 1 and half years after receiving the Physical Therapy rehabilitation intervention. The prime aim of the study was to achieve gross motor skills and improve the strength in bilateral lower extremities. After the intervention improvement was seen in GMFM-88. Total pre-intervention score was 11.36% and total post-intervention score was 70.09%. Thus, the improvement was seen in all A, B, C, D, E dimensions. In dimension B, improvement was seen in sitting balance she was able to touch the toys behind 45°. In dimension C, she was able to crawl backward down 4 steps on hands and knee, able to attained forward 10 steps kneel walking with free arm. In dimension D, she started maintained static standing balance for 20 sec with arm free. In dimension E, she was able to ascend and descends 4 steps with holding one sided railing.

Christina Stark et al concluded that, patients with type II and type III by giving combination of Physical Therapy...
rehabilitation and vibration assisted neuromotor rehabilitation there was significant positive changes occurred after 12 months in Hammersmith Functional Mobility Scale and Gross Motor Function Measure 66. [9]

Improvement was seen in Hammersmith Functional Motor Scale (HFMS) and it was improved from 8/66 to 45/66. Most improvement was seen in following components sitting independently, four-point kneeling, crawling, High kneeling to left and right half kneeling, unsupported standing, initiates squats with arm support, ascends and descends 2-4 stairs with railing support.

After physical therapy rehabilitation programmed improvement is also seen in muscle power of bilateral lower extremities. Aga Lewelt et al reported that, progressive resistance training exercises program was pain free and improvement in motor function as well as in strength was seen and also these exercise program was practicable, safe, easy to perform and well tolerated in children with SMA. [10]

Sussan T. Iannaccone et al said that, Gross Motor Function Measures, quantitative muscle testing, pulmonary function tests and quality of life were reliable outcome measures for clinical trials in pediatric patients with spinal muscular atrophy. [4]

CONCLUSION

The therapeutic exercises rehabilitation program was safe in patients with types II spinal muscular atrophy. Significant beneficial changes occurred after measuring the GMFM-88, HFMS and MMT after 18 months after receiving goal-oriented functional physical therapy rehabilitation and home-based exercises.

ACKNOWLEDGMENTS

The investigators express sincere gratitude to study participant and her family for their creativity, courage, and partnership in this endeavor. Expressing gratitude towards HOD of Pediatric Physiotherapy Department, Dr. M. Sangeetha for trusting my abilities and allowing me to do this study.

Declaration of interest: The authors report no conflict of interest. The authors alone are responsible for the content and writing of this paper.


REFERENCES

2. O'Connor M. Use of Aquatic Based Physical Therapy in Treating an Adolescent with Severe Type II Spinal Muscle Atrophy: A Case Report.


Factors Influence of Acute Respiratory Infection Incidence to Child Under Five Years in Timika Jaya Health Primary Mimika District

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ABSTRACT

Background: Acute Respiratory Infection is a health problem that can cause death in infants. Various factors are caused by age of children under five, nutritional status, immunization status, education, ventilator, smoking habits in the home and the use of mosquito repellent.

Objective of the study: Evaluate what factors are related to the incidence of ARI in Timika jaya Health Center, Mimika District, Papua Province.

Research Methods: Descriptive analytical cross sectional study design. The population of all under-fives and a sample of 79 under-fives was random sampling. Data were obtained using a questionnaire and analyzed using chi square and regression binary logistic.

Results: Factors related to the incidence of ARI in infants at Timika Jaya Community Health Center were nutritional status (p-value = 0.000; RP = 5.471; CI95% = (3.022 - 9.904), status of immunization of infants (p-value = 0.001; RP = 2.992; CI95% = (1.633 - 5.481), maternal education (p-value = 0.019; RP = 2.318; CI95% = (1.221 - 4.402), ventilation area (p-value = 0.000; Rp = 0.048; CI95% = (0, 012 - 0.188), as soon as the kitchen (p-value = 0.007; RP = 2.594; CI95% = (1.375 - 4.896), habit of using mosquito repellent (p-value = 0.000; Rp = 4.642; CI95% = (2.600 - 8.285 ) ARI for toddlers in Timika Jaya Community Health Center is under five years old (p-value = 0.208; RP = 1.944; CI95% = (0, 973 - 3.884). Compilation, immediate kitchen and habit of using mosquito repellent.

Keywords: Acute, Respiratory, Infection, Child

1. INTRODUCTION

In 2015 based on WHO data more than 1.3 million children died because of pneumonia, most of them were under 3 years old and almost 99% of these deaths were in developing countries and data for cases of ARI in India 30, 1% China 21, 2%, Pakistan 39, 4% and in Indonesia 32, 10% of these cases occur where access to health care facilities and treatment is out of reach or inactive for many children (WHO, 2016).

According to Blum (1981) cited by Notoatmodjo (2011) that public health is influenced by four namely environmental factors, behavioral factors, health service factors and genetic factors. Host factors that can increase the susceptibility of ARI diseases such as under five factors (low birth weight age, immunization status and nutritional status) maternal factors; education, work and behavior, (Maryunani, 2013; Mallongi, et.al. 2014;2016).

The Indonesian Ministry of Health in 2017 reported under five mortality or AKABA of 27 per 1000 live births (BPS, 2017). The cause of death of children under five is due to ARI (7.60%) with the incidence of ARI nationally in infants (57.84%). The incidence of ARI in Papua Province in 2017 as a whole reached 31% (Indonesian Ministry of Health, 2017). Based on the results of the 2013 Riskesdas report, ARI occupies the highest prevalence of under-fives, namely more than 35%. Data on ISPA cases in 2014 were 27.17% of cases and 2015 were 6.64% of cases in toddlers. The prevalence of ARI also tends
to occur higher in the group of mothers with the lowest level of maternal education and income level. The occurrence of ARI in infants is influenced by several factors, namely the nutritional status, behavior and density of residents and maternal characteristics such as mother's age, level of education and knowledge of the mother (Ministry of Health, 2012).

ARI, especially pneumonia in Papua, is included in the top 10 diseases and ranks seventh after influenza disease, clinical malaria, Falcifarum malaria, Malariaivivax, Diarrhea and Malaria mix. and in 2014 as many as 0, 75% of cases. In 2015, 0, 69% of cases in toddlers, in 2016, as many as 0, 53% of cases in infants (Papua Provincial Health Office, 2017). Data obtained from the Mimika Regency Health Office where toddlers suffering from ARI in 2014-2016 ranked first in the top 10 most diseases in Mimika Regency, with ARI incidence in 2014 of 2, 54% of cases. In 2015, there were 3, 38% of cases. In 2016 there were 1, 82% of cases (Papua Provincial Health Office, 2017)

Based on data from Disease that can be obtained from the Timika Jaya Community Health Center in Mimika Regency, that the last 3 years is a data of the top 10 diseases, one of which is ARI disease which ranked first, in 2014, the number of children suffering from ARI 5, 16%, in 2015, 6, 21%, 2016, 6, 36% and in 2017, from January to March, 79 cases suffered from ISPA. With a population of 10,875 people, per 1,000 populations consisted of 368 mothers of children under five in Timika Jaya Health Center. Based on the explanation above, I was interested in conducting a study on "Factors related to the incidence of ARI in infants at Timika Jaya Health Center working area of Mimika District Health Office in 2018".

2. MATERIALS AND METHODS
2.1 Types of Research
This research is an analytical study with a cross sectional study design, where data is collected at the same time simultaneously. Research methods are carried out with the aim of knowing the relationship of the situation objectively (Natoatmodjo, 2012).

2.2 Location and time of Research
The research location at the Timika Jaya Community Health Center in Mimika Regency was conducted for a month in October 2018 - November 2018.

2.3 Population and Samples
1. Population
The population in this study were all research objects or objects under study (Natoatmodjo 2010) The population in this study were all mothers who had children under five with the number of health center data in August - September 2018 as many as 368 mothers of children under five in the work area of Timika Jaya District Health Center Mimika in 2018 "

2. Samples
The sample is a portion of the population that is considered representative (Notoatmodjo, 2012). The sample size in this study is a sample of the population of researchers using the Slovin formula with about 79.

3. RESULTS
3.1 Bivariate Analysis
a. Age relationship of toddlers with ARI in infants

<table>
<thead>
<tr>
<th>Age</th>
<th>ARI incidence in infants</th>
<th>No ARI</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>1 &lt; 12 month</td>
<td>5 (55.6)</td>
<td>20</td>
<td>71.4</td>
</tr>
<tr>
<td>2 &gt; 12 month</td>
<td>20 (28.6)</td>
<td>50</td>
<td>71.4</td>
</tr>
<tr>
<td>Total</td>
<td>25 (31.6)</td>
<td>54</td>
<td>68.4</td>
</tr>
</tbody>
</table>

p-value = 0.208; RP = 1,944; CI95% = (0.973 – 3.884)

Based on Table 4.3, it shows that of 9 toddlers aged <12 months there were 5 people (55.6%) with ARI and not ARI as many as 4 people (44.4%). Whereas 70 people aged >12 months were 20 people (28.6%) with ARI and not ARI as many as 50 people (71.4%). The results of the chi square test obtained p-value = 0.208 >0.05. This means that there is no relationship between the age of children under five to the incidence of ARI in infants at Timika Jaya.
Health Center. Prevalence ratio test results (RP) = 1,944; CI95% = (0, 973 - 3,884) with a lower value not including 1 which means that the age of a toddler is not a risk factor for the incidence of ARI.

b. The relationship of nutritional status of children with the incidence of ARI in infants

Based on Table 2, it shows that of the 28 children under five with malnutrition status as many as 15 people (88.2%) with the incidence of ARI and not ARI as many as 2 people (11.8%). While from 62 children under five with good nutritional status as many as 10 people (16.1%) with the incidence of ARI and not ARI as many as 52 people (83.9%). The results of the chi square test obtained p-value = 0.000 <0.05. This means that there is a correlation between the nutritional status of children under five years of ISPA in infants at Timika Jaya Health Center. The prevalence ratio test results (RP) = 5.471; CI95% = (3,022 - 9,904) which means that the prevalence ratio of incomplete toddlers is likely to have ARI incidence 5,471 times higher than toddlers with complete immunization status.

c. Relationship between toddler immunization status and the incidence of ARI in infants

Based on Table 3, it shows that of the 21 children under five with incomplete immunization status as many as 13 people (61.9%) with the incidence of ARI and not ARI by 6 people (38.1%). While from 58 people with complete immunization status as many as 12 people (20.7%) with ARI incidence and not ARI as many as 46 people (79.3%). The results of the chi square test obtained p-value = 0.001 <0.05. This means that there is a relationship between immunization status of infants to the incidence of ARI in infants at Timika Jaya Health Center. Prevalence ratio (RP) = 2,992; CI95% = (1,633 - 5,481) which means that the immunization status of incomplete toddlers is likely to have ARI incidence 2,992 times higher than toddlers with complete immunization status.

d. Relationship between mother's education and the incidence of ARI in infants

Based on Table 4, it shows that of the 28 mothers of children with low education as many as 14 people (50%) with the incidence of ARI and not ARI as many as 14 people (50%). While from 51 mothers of children with high education as many as 11 people (21.6%) with the incidence of ARI and not ARI as many as 40 people (78.4%). The results of the chi square test obtained p-value = 0.019 <0.05. This means that there is a relationship between maternal education and the incidence of ARI in infants at Timika Jaya Health Center. The prevalence ratio (RP) = 2,318; CI95% = (1,221 - 4,402) which means that the education of mothers who have low childbirth is at risk of ARI by 2,318 times higher than under-educated mothers.

e. Relationship between ventilation in the house and the incidence of ARI in infants
Table 5. Relationship between Ventilation Area in the house and the incidence of ARI in infants in Timika Jaya Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Ventilation</th>
<th>ARI incidence in infants</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Not meet requirement</td>
<td>2</td>
<td>3.9</td>
</tr>
<tr>
<td>2</td>
<td>Meet requirement</td>
<td>23</td>
<td>82.1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>25</td>
<td>31.6</td>
</tr>
</tbody>
</table>

p-value = 0.000; RP = 0.048; CI95% = (0, 012 – 0.188)

Table 5, shows that of 51 people with extensive ventilation did not meet the requirements as many as 2 people (3.9%) with the incidence of ARI and not ARI as many as 49 people (96.1%). Whereas from 28 people who had extensive ventilation fulfilled the requirements as many as 23 people (82.1%) with the incidence of ARI and not ARI as many as 5 people (17.9%). The results of the chi square test obtained p-value = 0.000 <0.05. This means that there is a broad relationship of ventilation to the incidence of ARI in infants at Timika Jaya Health Center. The prevalence ratio (RP) = 0.048; CI95% = (0, 012 - 0.188) does not include 1 which means that the extent of home ventilation is not a risk factor for the incidence of ARI in infants.

f. Kitchen Smoke Relationships in the home environment with the incidence of ARI in infants

Table 6. The Relationship of Kitchen Smoke in the home environment with the incidence of ARI in infants in Timika Jaya Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>Kitchen Smoke</th>
<th>ARI incidence in infants</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Yes</td>
<td>14</td>
<td>53.8</td>
</tr>
<tr>
<td>2</td>
<td>Not</td>
<td>11</td>
<td>20.8</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>25</td>
<td>31.6</td>
</tr>
</tbody>
</table>

p-value = 0.000; RP = 2.594; CI95% = (1.375 – 4.896)

Based on Table 6, it shows that of the 26 people exposed to kitchen smoke as many as 14 people (53.8%) with the incidence of ARI and not ARI as many as 12 people (46.2%). While from 53 people who were not exposed to kitchen smoke as many as 11 people (20.8%) with the incidence of ARI and not ARI as many as 42 people (79.2%). The results of the chi square test obtained p-value = 0.007 <0.05. This means that there is a relationship of kitchen smoke to the incidence of ARI in infants in Timika Jaya Health Center. Prevalence ratio test results (RP) = 2,594; CI95% = (1,375 - 4,896) with a value that means that toddlers who are exposed to kitchen smoke as much as 2,594 times higher are likely to have an ARI event than toddlers who are not exposed to kitchen fumes.

g. The relationship between the habit of using mosquito repellent and the incidence of ARI in infants

Table 7. The relationship between the habit of using mosquito repellent and the incidence of ARI in infants in Timika Jaya Health Center

<table>
<thead>
<tr>
<th>No</th>
<th>habit of using mosquito repellent</th>
<th>ARI incidence in infants</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Yes</td>
<td>14</td>
<td>82.4</td>
</tr>
<tr>
<td>2</td>
<td>Not</td>
<td>11</td>
<td>17.7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>25</td>
<td>31.6</td>
</tr>
</tbody>
</table>

p-value = 0.000; RP = 4.642; CI95% = (2.600 – 8.285)

Based on Table 7, it shows that of the 17 people with the habit of using the mosquito repellent drug as many as 14 people (82.4%) with the incidence of ARI and not ARI as many as 3 people (17.6%). While from 62 people who did not use the mosquito repellent as many as 11 people (17.7%) with the incidence of ARI and not ARI as many as 51 people (82.3%). The results of the chi square test obtained p-value = 0.000 <0.05. This means that there is a relationship between the habit of using mosquito repellent against ISPA in infants in Timika Jaya Health Center. Prevalence ratio (RP) = 4,642; CI95% = (2,600 - 8,285) with a value that means that the habit of using mosquito repellent 4.642 times higher is likely to have an ARI event than there is no habit of using mosquito repellent.

4. DISCUSSION

4.1 Relationship between the age of a toddler and the incidence of ARI in infants

The results of the study were obtained from the results of statistical tests that there was no relationship between the age of children under five to the incidence of ARI in infants in Timika Jaya Community Health Center,
Previous research conducted by Widia (2017) revealed that the nutritional status of children under five is related to the incidence of ARI due to the lack of nutritional status that causes a lack of endurance for children under five. Toddlers are a group of people who are vulnerable to malnutrition, in this group experiencing a cycle of growth and development that requires nutrients that are greater than other age groups so that toddlers are the easiest to suffer from nutritional disorders. The incidence of malnutrition is like an iceberg phenomenon where the incidence of malnutrition can cause death. In the case of malnutrition, it will be more susceptible to infection due to decreased immunity against invading pathogens. Good growth and adequate immunological status will also produce good health (Parii, 2014).

4.2. The relationship of nutritional status of children with the incidence of ARI in infants.

The results of the study were obtained from the results of statistical tests that there was a relationship between nutritional status of children under five years of ARI in infants in Timika Jaya Health Center (p-value = 0.000 < 0.05).
work together and foster a poor prognosis.

Culture guides people in how to behave and fulfill their basic biological needs, including the need for food. Culture also determines when a person can and should not consume food (known as taboo), although not all things that are taboo make sense and are good in terms of health. Not a few things are taboo is a good thing when viewed from health, one example is toddlers who are taboo to eat sea fish because it is feared will cause worms. In fact, in terms of health, the opposite applies; eating fish is very good for toddlers because it has a protein that is needed for growth. There are 3 groups of community members who usually have restrictions on certain foods, namely toddlers, pregnant women, and nursing mothers (Sulistyaningish, 2011).

This research is in line with the research conducted by Watopa (2015) in Waropen District that there is a cultural relationship between family eating and children's nutritional status. The culture of eating is lacking, namely the mother does not provide children with certain dietary foods that are believed, Mother follows the child's willingness to eat which is not as diverse as eating rice with soy sauce only, Mother gives children solid food in children who are easily satisfied. In addition, mothers do not provide certain foods, even though mothers know that food is beneficial for children. While the good mother's eating culture, mothers choose foods that are cheap and healthy and diverse. A culture of eating that is less at risk of under five nutrition status. This is evident from the prevalence ratio test of 4.964 times higher compared to mothers who have a good family eating culture (Mapandin, 2006). According to Kristianto (2013), the culture of feeding children under five occurs because mothers and families have beliefs that are based on cultural aspects, so the mother decides to provide food in accordance with the cultural conditions.

The Lani and Dani tribes occupy the Mimika Regency, which is a new regency which is the result of the expansion of Jayawijaya Regency. Mimika Regency occupies the western part of the Baliem Valley. The Mimika Regency area consists of hilly areas, steep ravines, high mountains up to 2,500 meters above sea level (asl). Such topographic conditions are like natural isolation which is the cause of this region's underdevelopment. The shape of the grooving Mimika land makes it difficult to make road. The livelihoods of the Lani people are farming, the crops they plant are cassava (Mimika District Health Office, 2017).

Daily life of the Lani people is obtained through the results of cultivation, hunting and raising pigs. Their food is sweet potatoes, taro, sugar cane, bananas, vegetable candles, sweet potato leaves, beans. Women who work are farmed. His work is gardening, red fruit, oranges, pineapple, alpuket, banana, corn and hunting. Food given to babies is sweet potatoes, taro and bananas. Sweet potatoes and pork for the Lani tribe are a source of basic needs in various ways, so children have a variety of foods.

The role of Pukesmas officers can increase maternal knowledge through the role of posyandu when toddlers are weighed by providing counseling about giving balanced gizi intake so that mothers' knowledge increases and influences the provision of nutrition to their children.  

4.3 Relationship between toddler immunization status and the incidence of ARI in infants

The results of the study were obtained from the results of statistical tests that there was a relationship between
immunization status of toddlers on the incidence of ARI in infants in Timika Jaya Health Center \( (p \text{-value} = 0.001 < 0.05) \). This research is in line with previous research conducted by Oktaviani (2017) in the Teluknaga District Health Center, Tangerang Regency, revealing the same thing that incomplete immunization status is associated with the incidence of ARI in infants.

Provision of immunization is one attempt to establish an antibody system in the human body. Antibodies formed from immunization require time to function. Completeness of immunization can help the formation of antibodies optimal is expected to suppress the development of the disease does not become more severe if exposed to ARI. Infants and toddlers who have had measles and survivors will get natural immunity against pneumonia as a complication of measles. Most ARI deaths come from the type of ARI that develops from diseases that can be prevented by immunization (Maryunani, 2013). Toddlers with incomplete immunization status were 61.9% with ARI incidence and as many as 20.7% with complete immunization. Prevalence ratio \( (RP) = 2.992; CI95\% = (1.633 - 5.481) \) which means that the immunization status of incomplete toddlers is likely to have ARI incidence 2,992 times higher than toddlers with complete immunization status.

Paying attention to the problem of complete immunization status with the incidence of ARI in infancy is a period of growth of each body system. This condition certainly causes toddlers vulnerable to infection. Factors that support children who are not susceptible to infection are to increase immunity through immunization. Thus, the importance of basic immunization for children, so the role of puskesmas officers in providing counseling to mothers so that their children get immunizations for children under five whose immunization is not complete.

### 4.4 Relationship between mother's education and the incidence of ARI in infants

The results of the study were obtained from the results of statistical tests that there was a relationship between maternal education on the incidence of ARI in infants in Timika Jaya Health Center \( (p \text{-value} = 0.019 < 0.05) \). This is in line with the research conducted by Chandra (2017), stating that maternal education is one of the influencing factors behavioral prevention of ARI. There is a positive relationship between the level of education with ARI prevention behavior, the higher the education level of the respondent, the proportion of respondents' good actions better.

Mothers of children under five with low education as much as 50% with the incidence of ARI and as many as 21.6% of mothers with high education their children experience the incidence of ARI. The prevalence ratio \( (RP) = 2.318; CI95\% = (1.221 - 4.402) \) which means that the education of mothers who have low childbirth is at risk of ARI by 2,318 times higher than under-educated mothers. Mother's education is closely related to family health. Mothers generally play a role in maintaining the health of infants and toddlers. All efforts are made so that the baby remains healthy. Therefore maternal education is very important in maintaining the health of infants and toddlers. A well-educated mother will have sufficient insight in maintaining the health of her baby and child. Efforts to prevent ARI can be carried out by Timika Jaya Community Health Center officers by increasing counseling efforts to mothers, so that low-educated mothers can understand how to care for the family, especially care for babies and babies.

### 4.5 The relationship between the extent of ventilation and the incidence of ARI in infants

The results of the study were obtained from the results of statistical tests that there was a relationship between
smoking habits in the home to the incidence of ARI in infants in Timika Jaya Health Center (p-value = 0.000 <0.05). The results of this study are in line with the research conducted by Sofia (2017), revealing that toddlers who live at home with smokers in homes are more susceptible to ARI. The number of smokers will be proportional to the number of sufferers of health problems. Cigarette smoke will increase the risk for toddlers to get ARI attacks. The area of home ventilation of respondents who did not meet the requirements was 3.9% with the incidence of ARI and as much as 82.1%. The area of ventilation of houses of respondents who qualified for the incidence of ARI. The prevalence ratio (RP) = 0.048; CI95% = (0.012 - 0.188) does not include 1 which means that the extent of home ventilation is not a risk factor for the incidence of ARI in infants.

Ventilation is the process of providing air or air flow to or from the room both naturally and mechanically. The function of ventilation can be described as supplying clean air, namely air containing optimum oxygen levels for breathing. Free the room air from smells, smoke or dust and other pollutants by air dilution. Supply heat so that the body heat loss is balanced. Supply heat due to loss of heat from the room and buildings. Removing excess hot air caused by body radiation, conditions, evaporation or external conditions. Disabling the air temperature evenly (Maryunani, 2013). This can occur in homes with poor ventilation and the kitchen is located in a house united with a bedroom, a room where babies and toddlers play. This is more likely because babies and toddlers are at home with their mothers longer, so the pollution dose will certainly be higher. Mother's prevention of ARI can be done by reminding family members who smoke so that they do not smoke at home or stop smoking in addition to harming health as well as detrimental to the family economy because they simply throw away money that is not useful.

4.6 Relationship of kitchen smoke in the home environment with the incidence of ARI in infants

The results of the study obtained from the results of statistical tests there is a relationship between the habit of burning garbage in the home environment to the incidence of ARI in infants in Timika Jaya Health Center (p-value = 0.007 <0.05). The results of this study are in line with the research conducted by Sofia (2017), revealing that family habits of burning waste are more susceptible to ARI disease. The smoke of burning trash has a detrimental effect on health such as lung cancer, asthma, tuberculosis, cataracts, heart disease, babies born with low body weight, blindness, and even affect children's brain abilities (Maryunani, 2013).

Exposure to kitchen smoke, especially from wood burning and the like, and air pollution to improve environmental hygiene can be done for example by providing good ventilation in the house, maintaining cleanliness, and using protective masks to reduce exposure to pollution (Sigalingging, 2013).

Residential Health Requirements especially ventilation according to the Decree of the Minister of Health of the Republic of Indonesia Number: 829 / Menkes / SK / VII / 1999 that the area of permanent natural ventilation or ventilation is at least 10% of the floor area. With good ventilation, allowing fresh air to easily enter the house and dirty air pollution (smoke) can come out, so that the incidence of ARI will decrease (Marhamah, 2013; Edowai, 2018; Linggar, 2019)

Toddlers exposed to kitchen smoke were 53.8% with ARI events and as many as 20.8% were not exposed to kitchen fumes with ARI events. Prevalence ratio test results (RP) = 2.594; CI95% = (1.375 - 4.896) with a value that means that toddlers who are exposed to kitchen smoke as much as 2.594 times higher are likely to have an ARI event than toddlers who are not exposed to kitchen fumes.
According to Smith (2016), that kitchen smoke as the main cause of health problems is caused by incomplete combustion, having the same impact as cigarettes is even more dangerous because the amount of smoke is very large. The compound produced is like burning a thousand cigarettes every hour. Prevention efforts can be carried out by the family so as not to burn waste and should dispose of garbage in a place that has been provided by the government.

4.7. The relationship between the habit of using mosquito repellent in a home environment and the incidence of ARI in infants

The results of the study were obtained from the results of statistical tests that there was a relationship between the habit of using mosquito repellent against the incidence of ARI in infants in Timika Jaya Health Center (p-value = 0.000 <0.05). The results of this study are in line with the research conducted by Sofia (2017), revealing that the habit of using mosquito repellents is susceptible to ARI disease.

Toddlers whose parents have the habit of using mosquito repellent drugs as much as 82.4% with ARI incidence and as much as 17.7% with ARI events. Prevalence ratio (RP) = 4,642; CI95% = (2,600 - 8,285) with a value that means that the habit of using mosquito repellent 4.642 times higher is likely to have an ARI event than there is no habit of using mosquito repellent. Smoke from mosquito coils is dangerous for health, research found lung damage caused by one insect repellent was the same as damage caused by 100 cigarettes. Existence DDVP content (dichlorovynil dimetyl phosfat), a substance that is dangerous if continuously exposed for a long period of time will cause nerve damage, respiratory problems and trigger cancer. Other than that the chemical content contained in insect repellent can reduce enzyme activity so that there is a bad influence towards heart and reproduction (Dahnier, 2011).

Families who use insect repellent so that exposure to infants often occurs resulting in many infants suffering from ARI. Though insect repellent is very dangerous for health. The active ingredients contained in insect repellent are very dangerous and can interfere with human health. CO2 is an invisible, but deadly gas. The existence of an active ingredient in insect repellent, being dangerous is at a small concentration, this gas no smell (Sofia, 2017). The use of mosquito repellent that is incorrect, can endanger health. How far the impact depends on the type, amount, age and mixtures? Infants and toddlers can be said to be vulnerable to insect repellent. This can happen because his organs are not perfect, his endurance is not good and the cough reflex is not good. More dangerous effects will also occur in children who are allergic and have asthma talent. Therefore the family can replace the use of mosquito repellent using safer anti-mosquito, such as the use of mosquito nets.

4. CONCLUSION

1. There is no relationship between the age of children under five to the incidence of ARI in infants in Timika Jaya Health Center (p-value = 0.208; RP = 1,944; CI95% = (0, 973 - 3,884)

2. There is a correlation between the nutritional status of children under five ISPA in infants at Timika Jaya Health Center. (p-value = 0.000; Rp = 5,471; CI95% = (3,022 - 9,904)

3. There is a relationship between immunization status of children under five to ISPA in infants in Timika Jaya Health Center (p-value = 0.019; RP = 2.318; CI95% = (1,221 - 4,402).

4. There is a relationship between mother's education on the incidence of ARI in infants in Timika Jaya Health Center (p-value = 0.019; RP = 2.318; CI95% = (1,221 - 4,402).

5. There is a broad relationship of ventilation to the incidence of ARI in toddlers at Timika Jaya Health Center (p-
value = 0.000; RP = 0.048; CI95% = (0.012 - 0.188).
6. There is a relationship of kitchen smoke to the incidence of ARI in infants in Timika Jaya Health Center (p-value = 0.007; RP = 2.594; CI95% = (1.375 - 4.896)
7. There is a relationship between the habit of using mosquito repellent against ISPA in infants in Timika Jaya Health Center (p-value = 0.000; RP = 4.642; CI95% = (2.600 - 8.285)

REFERENCES
• Anwar Mallongi., Teknik Penyehatan Lingkungan, 2014. Smart Writing, Yogyakarta, Indonesia
• Anwar Mallongi, Pengelolaan Limbah Padat Perkotaan., 2015. MS. Writing Revolution
• BKKBN, 2006. Petunjuk Pelaksanaan Kekuarga Berencana. BKKBN, Jakarta
Endang Gainau et.al. Factors Influence of Acute Respiratory Infection Incidence to Child Under Five Years in Timika Jaya Health Primary Mimika District


Morphological Pattern of Bone Lesions: Study of 204 Cases

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INTRODUCTION

Bone lesions are less commonly encountered lesions.¹ A spectrum of pathological bone lesions can be presented in any form from inflammatory to neoplastic conditions.² Bone lesions often pose diagnostic challenges to surgical pathologists.³ This challenge is magnified in an environment where resources are scarce.⁴

They may affect children, adults or the elderly persons. They sometimes occur and develop quickly, often revealing themselves through pain, or the appearance of a palpable mass or by restricting the movement of the part involved.⁵ Clinical symptoms alone are of relatively little significance in most bone lesions as most patients complain of pain or swelling or both.⁶ The roentgenogram can be considered as gross manifestation of bone lesion.⁷ It helps in defining exact location of lesion; however, it also has limitations as it reflects the gross manifestation of the lesion only.¹

Histopathological study enables us to understand the spectrum of bone lesions and gives an idea of different bone tumours and tumour-like lesions.⁵ The aim is to study histopathology of bone lesions and correlate them with age, gender and site of occurrence.

SUBJECTS AND METHODS

A retrospective review of histopathological reports of all bone specimens received in the IbnSina pathology laboratory in Aden for a period of

ABSTRACT

Objective: To study histopathology of bone lesions and correlate them with age, gender and site of occurrence

Subjects and Methods: Retrospective study done of all bone lesions in for a period of 6 years from January 2008-December 2014 was done.

Results: Bone lesions were more common in males124 (60.8%) than in females80 (39.2%) (p-value < 0.005)
The most frequent age group affected with bone lesion was less than 20 105 (51.5%). Amongst non-neoplastic lesions, nonspecific osteomyelitis 24 (11.8%) and actinomycosis 19 (9.3%) affected all age groups.
The most common benign tumors was osteochondroma representing 50 (24.5%) while Giant cell tumor was the second frequent 31 (15.2%). Osteosarcoma was diagnosed in 14 (13.6%) cases
Amongst the tumor like lesions, the commonest were the simple cyst 11 (5.4%) predominant in age 20-40. (p-value < 0.001).
Actinomycosis affected only metatarsal bone 19 (9.3%). Nonspecific osteomyelitis 12 (5.9%) tuberculous osteomyelitis 5 (2.5 %)
The frequent site of benign, malignant bone tumors and tumor-like lesions, was in tibia (p-value < .001)

Conclusion: There is male preponderance for bone lesions. Nonspecific osteomyelitis was most frequent non-neoplastic bone lesions. Among the bone tumors, osteochondroma and osteosarcoma were common. Tibia was the frequent site affected.

KEYWORDS: bone, osteomyelitis, osteochondroma, osteosarcoma site
6 years from January 2008 December 2014 was done. All the histopathological request forms and slides of bone biopsies were reviewed for relevant information of age, gender, histopathological interpretation and the anatomical site of occurrence. Data processing and data analysis were done using the Statistical Package for the Social Sciences (SPSS-20). Percentage was calculated and approximated. Chi-Square test was applied to identify any significant relationship between the study variables with a significant level of p-value < 0.05. All tumors of hematopoietic and odontogenic origin were excluded in this study.

**Ethics statement**

Ethical approval was obtained from Research and Ethics Committee faculty of Medicine and Health Sciences university of Aden. (REC 37-2018)

**RESULTS**

The total 204 cases of bone lesions were divided into 4 broad categories: Non-neoplastic bone lesions 73(35.8%) benign neoplastic lesions 88(43.1%) malignant neoplastic lesions 14(6.9%). and tumor-like lesions 29(14.2%). Bone lesions were more common in males 124(60.8%) than in females 80(39.2%) with male to female ratio as 1.5:1.

<table>
<thead>
<tr>
<th>Histological types</th>
<th>Gender</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-neoplastic bone lesions</td>
<td>33(16.2%)</td>
<td>40(19.6%)</td>
</tr>
<tr>
<td>Benign neoplasia</td>
<td>23(11.3%)</td>
<td>65(31.9%)</td>
</tr>
<tr>
<td>Malignant neoplasia</td>
<td>9(4.4%)</td>
<td>5(2.5%)</td>
</tr>
<tr>
<td>Tumor-like lesions</td>
<td>15(7.4%)</td>
<td>14(6.9%)</td>
</tr>
<tr>
<td>Total</td>
<td>80(39.2%)</td>
<td>124(60.8%)</td>
</tr>
</tbody>
</table>

p-value < 0.005

Non-neoplastic bone lesions and benign lesions were more frequent in males 40(19.6%) and 65(31.9%) cases respectively. While malignant lesions and tumor-like lesions were more frequent in females 9(4.4%) and 15(7.4%) cases respectively. There was a significant relationship between distribution of bone lesions and the gender of patient’s p-value < 0.005.

Amongst non-neoplastic lesions, nonspecific osteomyelitis 24(11.8%) was commonest followed actinomycosis 19(9.3%) and osteosclerosis 17(8.3%). Exuberant fracture callus and tuberculosis osteomyelitis was less frequent 7(3.4%) and 6(2.9%).

In less than 20 years of age, nonspecific osteomyelitis 10(4.9%) was predominant followed osteosclerosis 5(2.5%) and tuberculous osteomyelitis 4(2.0%). While in age group 20-40 years was more frequent affected with nonspecific osteomyelitis 11(5.4%) followed by actinomycosis 9(4.4%) and osteosclerosis 9(4.4%), above 40 years actinomycosis was predominant 7(3.4%) than nonspecific osteomyelitis 3(1.5%).

The most common benign tumors was osteochondroma representing 50(24.5%) of the total bone lesion, 38(18.6%) occurred in the age group less than 20. Giant cell tumor was the second frequent was seen in 31(15.2%) predominant in the age group 20-40 representing 18(8.8%). Enchondroma 4(2.0%) occurred in equal frequency 2(1.0%) in age group less than 20 and 20-40 years. Osteosarcoma was diagnosed in 14(13.6%) cases affected only age group less than 20, no case was found above 20 years.

Amongst the tumor like lesions, the commonest were the simple cyst accounted for 11(5.4%) frequent in age group 20-40, 6(2.9%). Aneuryssmal bone cysts accounted for 10(4.9%) was common in age less than 20, 10(4.9%) while fibrous dysplasia was the least common 8(4%) and occurred in equal frequency 4(2.0%) in age groups and less 20 and 20-40 years.

The most frequent age group affected with bone lesion was less than 20 accounted for 105(51.5%) followed 82(40.2%) in 20-40 years, above 40 years was the least affected presenting 17(8.3%) of total cases. There was a significant
relationship between bone lesions and age group of patients p-value < 0.001.

<table>
<thead>
<tr>
<th>Histological Subtypes</th>
<th>Less than 20 years</th>
<th>20–40 years</th>
<th>Above 40 years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actinomyocysis</td>
<td>3(1.5%)</td>
<td>9(4.2%)</td>
<td>7(3.4%)</td>
<td>19(9.1%)</td>
</tr>
<tr>
<td>Nonspecific Osteomyelitis</td>
<td>10(4.9%)</td>
<td>11(5.4%)</td>
<td>3(1.5%)</td>
<td>24(11.8%)</td>
</tr>
<tr>
<td>Tb Osteomyelitis</td>
<td>4(2.0%)</td>
<td>2(1.0%)</td>
<td>0(0.0%)</td>
<td>6(3.0%)</td>
</tr>
<tr>
<td>Exuberant fracture callus</td>
<td>3(1.5%)</td>
<td>4(2.0%)</td>
<td>0(0.0%)</td>
<td>7(3.5%)</td>
</tr>
<tr>
<td>Osteosclerosis</td>
<td>5(2.5%)</td>
<td>9(4.2%)</td>
<td>3(1.5%)</td>
<td>17(8.2%)</td>
</tr>
<tr>
<td>Benign and malignant neoplasia</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Osteochondroma</td>
<td>38(18.6%)</td>
<td>11(5.4%)</td>
<td>1(0.5%)</td>
<td>50(24.5%)</td>
</tr>
<tr>
<td>Giant cell tumor</td>
<td>11(5.4%)</td>
<td>18(8.8%)</td>
<td>2(1.0%)</td>
<td>31(15.2%)</td>
</tr>
<tr>
<td>Enchondroma</td>
<td>2(1.0%)</td>
<td>2(1.0%)</td>
<td>0(0.0%)</td>
<td>4(2.0%)</td>
</tr>
<tr>
<td>Osteoma</td>
<td>0(0.0%)</td>
<td>2(1.0%)</td>
<td>1(0.5%)</td>
<td>3(1.5%)</td>
</tr>
<tr>
<td>Osteosarcoma</td>
<td>14(6.9%)</td>
<td>0(0.0%)</td>
<td>0(0.0%)</td>
<td>14(6.9%)</td>
</tr>
<tr>
<td>Tumor-like lesions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple cyst</td>
<td>5(2.5%)</td>
<td>6(3.0%)</td>
<td>0(0.0%)</td>
<td>11(5.4%)</td>
</tr>
<tr>
<td>Aneurysmal bone cysts</td>
<td>6(2.9%)</td>
<td>4(2.0%)</td>
<td>0(0.0%)</td>
<td>10(4.9%)</td>
</tr>
<tr>
<td>Fibrous dysplasia</td>
<td>4(2.0%)</td>
<td>4(2.0%)</td>
<td>0(0.0%)</td>
<td>8(4.0%)</td>
</tr>
<tr>
<td>Total</td>
<td>105(51.5%)</td>
<td>52(25.5%)</td>
<td>17(8.3%)</td>
<td>204(100%)</td>
</tr>
</tbody>
</table>

- p-value < 0.001

The commonest site affected with actinomycosis was metatarsal bone 19(9.3%). Nonspecific osteomyelitis 12(5.9%), tuberculous osteomyelitis 8(3.9%) and exuberant fracture callus 8(3.9%) commonly affected tibia. While osteosclerosis 8(3.9%) occurred predominantly in the facial bones 8(3.9%) followed by femur 5(2.5%).

The commonest site of benign bone tumors, osteochondroma and giant cell tumor was the tibia 26(12.7%) and 20(9.8%). Enchondroma 4(2.0%) was only diagnosed in metacarpal bones. All cases of osteoma occurred in the facial bones around the orbit 3(1.5%), Osteosarcoma was predominant in tibia 6(2.9%) followed by femur 5(2.5%).

The majority of tumor-like lesions, simple cyst 5(2.5%) aneurysmal bone cysts 8(3.9%) and fibrous dysplasia 5(2.5%) occurred in tibia. There was a significant relationship between bone lesions and location p-value < .001

<table>
<thead>
<tr>
<th>Histological Subtypes</th>
<th>Metatarsal bone</th>
<th>Tibia</th>
<th>Femur</th>
<th>Humerous</th>
<th>Facial</th>
<th>Metacarpal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actinomyocysis</td>
<td>19(9.3%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>19(9.3%)</td>
</tr>
<tr>
<td>Nonspecific Osteomyelitis</td>
<td>1(0.5%)</td>
<td>12(5.9%)</td>
<td>8(3.9%)</td>
<td>2(1%)</td>
<td>0(0%)</td>
<td>1(0.5%)</td>
<td>24(11.8%)</td>
</tr>
<tr>
<td>Tb Osteomyelitis</td>
<td>1(0.5%)</td>
<td>5(2.5%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>6(3.0%)</td>
</tr>
<tr>
<td>Callus</td>
<td>1(0.5%)</td>
<td>3(1.5%)</td>
<td>1(0.5%)</td>
<td>2(1%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>7(3.5%)</td>
</tr>
<tr>
<td>Osteosclerosis</td>
<td>0(0%)</td>
<td>4(2.0%)</td>
<td>5(2.5%)</td>
<td>0(0%)</td>
<td>8(3.9%)</td>
<td>0(0%)</td>
<td>17(8.3%)</td>
</tr>
<tr>
<td>Benign and malignant neoplasia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Osteochondroma</td>
<td>0(0%)</td>
<td>26(12.7%)</td>
<td>19(9.3%)</td>
<td>5(2.5%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>50(24.5%)</td>
</tr>
<tr>
<td>Giant Cell Tumor</td>
<td>0(0%)</td>
<td>20(9.8%)</td>
<td>5(2.5%)</td>
<td>5(2.5%)</td>
<td>0(0%)</td>
<td>1(0.5%)</td>
<td>31(15.2%)</td>
</tr>
<tr>
<td>Enchondroma</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>4(2.0%)</td>
<td>4(2.0%)</td>
</tr>
<tr>
<td>Osteoma</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>3(1.5%)</td>
<td>0(0%)</td>
<td>3(1.5%)</td>
<td>3(1.5%)</td>
</tr>
<tr>
<td>Osteosarcoma</td>
<td>1(0.5%)</td>
<td>6(2.9%)</td>
<td>5(2.5%)</td>
<td>2(1%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>14(6.9%)</td>
</tr>
<tr>
<td>Tumor-like lesions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple Cyst</td>
<td>0(0%)</td>
<td>5(2.5%)</td>
<td>3(1.5%)</td>
<td>3(1.5%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>11(5.4%)</td>
</tr>
<tr>
<td>Aneurysmal Bone Cysts</td>
<td>0(0%)</td>
<td>8(3.9%)</td>
<td>1(0.5%)</td>
<td>1(0.5%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>10(4.9%)</td>
</tr>
<tr>
<td>Fibrous Dysplasia</td>
<td>0(0%)</td>
<td>5(2.5%)</td>
<td>2(1.0%)</td>
<td>1(0.5%)</td>
<td>0(0%)</td>
<td>0(0%)</td>
<td>7(4.0%)</td>
</tr>
<tr>
<td>Total</td>
<td>23(11.3%)</td>
<td>94(46.1%)</td>
<td>49(24.0%)</td>
<td>21(10 %)</td>
<td>12(5.9%)</td>
<td>6(2.9%)</td>
<td>204(100%)</td>
</tr>
</tbody>
</table>

- p-value < 0.001
DISCUSSION

The bony lesions amount to a small proportion of all the lesions that exist in a population. Pattern of bone lesions is reported less frequently.[8]

In our study males were more commonly affected than females This is in agreement with Karia et al[1] Deoghare et.al[9] and Jain et.al[10] who reported the same. In this series non- neoplastic and benign lesions were more common than malignant lesions .Similar findings were reported in other studies[1,2,3].

The most common non-neoplastic condition was osteomyelitis in less than 20 years to 40 years age in our study. Pyogenic osteomyelitis is still frequently seen in the developing world, [11] it implies inflammation of bone and marrow; it may be complication of any systemic infection but frequently manifest as a primary solitary focus of disease. [2] Majority of the cases were located in tibia and femur similar to studies in literature.[12,13]

Although Actinomyces is a common organism in the mouth flora, it is an uncommon pathogen in osteomyelitis occurring in the extremity [14]. There are several reports of actinomycosis affecting foot.[15,16,17]. Actinomycosis of foot was the second most frequent after nonspecific osteomyelitis predominant in 20-40 years in the present study.

The incidence of tuberculosis has been increasing, especially in the past 2 decades. Skeletal tuberculosis is very rare compared with the frequency of the pulmonary form.[18] Tuberculous osteomyelitis predominantly affected tibia in our series in age group less than 20 years, it was less common cause of osteomyelitis contrary to the study of several authors.[2,5,6]. Others non neoplastic lesions was callus which is generated during fracture healing, is commonly discarded during surgical procedures.[19]. Reactive lesions of bone and periosteum produce bone and cartilage matrix, resulting in confusion with osteosarcoma,[20] in our series exuberant fracture callus was 3.4% predominantly in tibia misdiagnosed as osteosarcoma similar findings were observed by other studies.[21,22]. Austin and Moule used the term osteosclerosis in 1984 to describe regions with increased bone density not directly related to infections or systemic diseases,[23] in the present study osteosclerosis was predominant in the facial bone in the mandible in 20-40 years similar to the document in the literature.[24,25]

Benign neoplasia were more common than malignant which are in conformity with other studies done by Karia et al.[1] and Deoghare et al.[9]. In our study, the most frequent benign bone tumor was osteochondroma (24.5%), This corresponds to study done by others[10,26]. In the current study giant cell tumor was the second common benign neoplasia affecting tibia. Sharply contrasting with these findings is a study conducted by Deoghare et al.[9] and Kazi et al.[27] giant cell tumor was found to be the commonest benign bone tumor. Most commonly in femur followed by tibia. The others benign tumors in less frequency were enchondroma and osteoma in the present study.

The most common malignant tumour was osteosarcoma in our study affecting long bones. Others like Modi et al.[2] and Patel et al.[5] also reported similar findings. The age distribution was in less than 20 years, and we found no case above 20 contrary to the studies done by Rhtuose[3] and Katchy et. Al.[28]. Among the tumor-like lesions, simple cyst and was found to be the commonest with total of 11(5.4%) cases contrary to Mohammed et al report fibrous dysplasia was the most common tumour-like lesion.[29]. Other tumor-like lesion was aneurysmal bone cysts with predilection to the metaphysis of long bones,[30] most of cases were in patients under the age of 20 years as it is usually diagnosed at adolescence.[30]
CONCLUSION

There was male preponderance for bone lesions. Non-specific osteomyelitis was most frequent non neoplastic bone lesions. Among the bone tumors, osteochondroma and osteosarcoma were common. Tibia was the frequent site affected.

ACKNOWLEDGEMENT

We are grateful to colleagues in the Ibnnsina laboratory for their time and inputs to the development of this paper.

Conflict of interest statement:

The authors declare that they have no competing interest.

REFERENCES

8. Muhammad R and Ashok KT. Spectrum of Bone Lesions at Pakistan Institute of Medical Sciences Journal of Islamabad Medical & Dental College (JIMDC); 2012 (2):-69-71.


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Toxic Epidermal Necrolysis in a Paediatric Patient: A Case Report

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³Asso.Professor, Department of Paediatrics, Basaveshwara Medical College Hospital and Research Centre, Chitradurga

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ABSTRACT

Toxic Epidermal Necrolysis (TEN) and Stevens Johnson’s Syndrome (SJS) are severe adverse cutaneous drug reactions. In addition to severe skin symptoms, it is often accompanied by complications in numerous organs, such as liver, kidney, and lungs. The degree of epidermal detachment less than 10% of body surface area is classified as SJS, greater than 30% as TEN and 10-30% as SJS/TEN overlap. It is thought that this syndrome is a hypersensitivity complex that affects the skin and the mucous membranes. SJS/TEN have been observed with more than 100 drugs. Common culprits are antimicrobials, anti-epileptic drugs and Non-steroidal anti-inflammatory agents (NSAIDs). Diagnosis mainly relies on clinical signs and histopathology of skin lesions. The primary objective for a favourable outcome depends on rapid and aggressive supportive care until the skin regenerates itself in this self-limiting acute skin condition. Here we report an idiosyncratic drug reaction (IDR) in a 9 year old child.

Keywords: Toxic Epidermal Necrolysis, Stevens Johnson’s Syndrome, epidermal detachment, idiosyncratic drug reaction.

INTRODUCTION

Toxic Epidermal Necrolysis (TEN) and Stevens Johnson’s Syndrome (SJS) are severe adverse cutaneous drug reactions that predominantly involve the skin and mucous membranes. The degree of epidermal detachment less than 10% of body surface area is classified as SJS, greater than 30% as TEN and 10-30% as SJS/TEN overlap. Both are rare, with TEN and SJS affecting approximately 1 or 2/1,000,000 annually, and are considered medical emergencies as they are potentially fatal. The average reported mortality rate of SJS is 1-5%, and of TEN is 25-35%; it can be even higher in elderly patients and those with a large surface area of epidermal detachment. More than 50% of patients surviving TEN suffer from long-term sequelae of the disease. [¹]

In addition to severe skin symptoms, it is often accompanied by complications in numerous organs, such as liver, kidney, and lungs. Patient may initially be present with SJS, which subsequently evolves into TEN or SJS-TEN overlap. [²]

The incidence of TEN is estimated at 1 to 6 cases per million person-years. [³] TEN causes erosions of the mucous membranes, extensive detachment of the epidermis, and severe constitutional symptoms. [⁴] It is thought that this syndrome is a hypersensitivity complex that affects the skin and the mucous membranes. Although the majority of cases are idiopathic (without a known cause), the main class of known causes is medication, followed by infections and, rarely, cancers. [⁵]

SJS/TEN have been observed with more than 100 drugs. Common culprits are antimicrobials, anti-epileptic drugs and Non-steroidal anti-inflammatory agents (NSAIDs). [⁶] Drugs that are at “high” risk of inducing TEN/SJS include: Allopurinol, Trimethoprim-sulfamethoxazole and other sulfonamide-antibiotics, aminopenicillins, cephalosporins, quinolones, carbamazepine, phenytoin, phenobarbital and NSAID’s of the oxicam-type. [⁷]

The exact mechanism of SJS/TEN still remains largely unknown.
Immunological mechanisms, reactive drug metabolites or interactions between these two are proposed. Interactions between CD95 L and Fas (CD 95) are directly involved in the epidermal necrosis. Granulysin is also considered as a key mediator for disseminated keratinocyte death in SJS/TEN. [8]

Diagnosis mainly relies on clinical signs and histopathology of skin lesions. [9] Typical clinical signs initially include areas of erythematous and livid macules on the skin, on which a positive Nikolsky sign can be induced by mechanical pressure on the skin, followed within minutes to hours by the onset of epidermal detachment characterized by the development of blisters. It should be noted, however, that the Nikolsky sign is not specific for SJS/TEN. Mucosal, including ocular, involvement develops shortly before or simultaneously with skin signs in almost all cases. [10]

TEN is an acute emergency and is potentially life threatening if not treated promptly. However, since the pathophysiology of the disease remained largely unclear (until the recent discovery that the Fas ligand plays a major role in the apoptotic cell death), there is no specific therapy for TEN patients. The primary objective for a favourable outcome depends on rapid and aggressive supportive care until the skin regenerates itself in this self-limiting acute skin condition. [8]

The major cause of death in TEN is sepsis. [11] Meticulous monitoring of the patients in an ICU with daily laboratory examinations of blood and urinary electrolytes, serum creatinine and blood urea, blood glucose, CBC, blood culture and skin swab test are mandatory. Sterile handling of the patients is a must and cannot be over emphasized to minimize nosocomial infection. [12]

Fluids must be replaced intravenously, preferably through a peripheral line, especially during the first few days to compensate the loss of body fluids through large areas of denuded skin. Strict urinary output should be monitored, if necessary, through a catheter. The electrolyte balance is maintained by daily check up of serum electrolytes.

Meticulous therapy of eye is important to prevent early and long-term ocular complications. Daily examinations by an ophthalmologist and antiseptic and/or antibiotic eye drops are instilled every hour or two. Similarly, mouth and crusted lips should be gently rinsed atleast every two hours with physiologic saline and sprayed with antiseptics several times each day. Once the epidermal detachment exceeds 25% of the BSA, no steroids should be used in TEN patients since any benefit of corticosteroids is then far outweighed by its potential risk of developing sepsis. [8]

CASE REPORT
A 9yr old male child was admitted into PICU, Department of Paediatrics, Basaveshwara Medical College Hospital and Research centre, Chitradurga with skin rash, altered sensorium and septic shock. The patient had a history of fever, cough, running nose and vomiting of 2 days duration for which he received Ondansetron 4mg IM and Cefpodoxime at a local hospital. 24 hours later he developed skin rashes, swelling of eyes and lips. On examination, multiple tense vesicles measuring 0.5cm were found predominantly over the neck and trunk and were scarcely distributed over the limbs and face. Edema, erythema and crusting of lips and eyelids were seen. Conjunctivitis and oral ulcers were also present. The child was drowsy with a Glasgow Coma Scale (GCS) of 5 and was in septic shock with a systolic blood pressure of 78 mmHg. Septic Shock responded to oxygen, IV fluids boluses and IV antibiotics.

Lab examinations revealed a normal blood report and elevated blood urea. Dermatologist and Ophthalmologist opinions were taken. As the extent of skin detachment was greater than 30% the case was diagnosed as Toxic Epidermal Necrolysis.
Treatment given:

**External Route**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Tobramycin(3%/v) Eye Drops</td>
<td>1 drop</td>
<td>Topical</td>
<td>Q4H</td>
<td>D1-D16</td>
</tr>
<tr>
<td>2.</td>
<td>Moxifloxacin(0.5%/v) Eye Drops</td>
<td>1 drop</td>
<td>Topical</td>
<td>Q4H</td>
<td>D1-D16</td>
</tr>
<tr>
<td>3.</td>
<td>Chloramphenicol and Polymyxin-B Sulphate Eye Ointiment(10mg+10000units)</td>
<td>1 drop</td>
<td>Local Ocular</td>
<td>1-0-1</td>
<td>D1-D16</td>
</tr>
<tr>
<td>4.</td>
<td>Clobetasol Propionate and Neomycin Sulphate Cream(0.05%+0.5%/w/w)</td>
<td>-</td>
<td>Over the lips</td>
<td>1-0-1</td>
<td>D2-D16</td>
</tr>
<tr>
<td>5.</td>
<td>Fusidic Acid and Beclomethasone Dipropionate Cream(2%+0.025% w/w)</td>
<td>-</td>
<td>Applied on the scabs, formed after rupturing of vesicles.</td>
<td>1-0-1</td>
<td>D4-D16</td>
</tr>
<tr>
<td>6.</td>
<td>Liquid paraffin</td>
<td>-</td>
<td>Topical</td>
<td>1-1-1</td>
<td>D4-D16</td>
</tr>
</tbody>
</table>

**Internal Route**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Inj. Linezolid(2 mg/ml)</td>
<td>250mg</td>
<td>IV</td>
<td>1-0-1</td>
<td>D1-D11</td>
</tr>
<tr>
<td>2.</td>
<td>Syp.B-Complex with Vitamin C</td>
<td>5ml</td>
<td>PO</td>
<td>1-0-1</td>
<td>D5-D16</td>
</tr>
<tr>
<td>3.</td>
<td>Syp.Zinc Acetate oral Solution(20 mg/5ml)</td>
<td>2.5ml</td>
<td>PO</td>
<td>1-0-1</td>
<td>D5-D16</td>
</tr>
<tr>
<td>4.</td>
<td>Syp.Paracetamol (250 mg/5ml)</td>
<td>7ml</td>
<td>PO</td>
<td>1-1-1</td>
<td>D6-D16</td>
</tr>
</tbody>
</table>

By the second day of admission the GCS improved. The vesicles ruptured over the next week and were replaced by scabs which peeled off gradually leaving behind hypopigmented patches. The patient was ambulant, feeding well and afebrile at discharge. Eye drops and ointment were continued. During follow up ectropion of the eyelids and loss of eyelashes were seen.

**DISCUSSION**

SJS/TEN is life-threatening drug adverse reaction, with higher prevalence rate in Asian than in Western populations. [13] Patel TK et al., conducted a systematic review of the drug-induced Stevens-Johnson syndrome and toxic epidermal necrolysis in Indian population and concluded that major causative drugs were antimicrobials (37.27%), antiepileptics (35.73%) and nonsteroidal antiinflammatory drugs (15.93%). [14] Yamane Y et al., retrospectively analyzed reports of SJS and TEN published in medical journals from
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This case is an example for idiosyncratic drug reaction (IDR) where this adverse drug reaction does not occur in most patients treated. Hence these are rare and unpredictable and often life threatening. The reaction of a patient to a drug can be affected by the ethnic pharmacogenetic differences. The primary step is to withdraw the drug. Patient should be transferred to burn units for aseptic handling and sterile environment. Rapid and aggressive supportive care is given until the skin regenerates itself.

Practitioners should be aware of the possible idiosyncratic drug reactions (IDR) of a seemingly innocuous drug. But none are culpable since the reactions are unpredictable and unintentional.

Reports of Idiosyncratic drug reaction (IDR) of drugs by different people with different sensitivity that might not have been seen during clinical trials help to refine or confirm or deny the safety of a pharmaceutical drug. Thus Pharmacovigilance is an essential element for effective use of medicines and for high quality medical care.

REFERENCES


International Journal of Science and Healthcare Research (www.ijshr.com) Vol.4; Issue: 1; January-March 2019
12. Roujeau JC. Treatment of SJS and TEN, skin reaction to drugs. K. Kouppiou et al. Eds. CRC Press. 1998;141-50

Decomposition Process of Disposable Baby Diapers in Organic Waste with Takakura Method

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ABSTRACT

Disposable baby diapers are usually considered as problematic non-biodegradable waste because it is made of sodium polyacrylate molecule. However, because of the high content of cellulose, disposable baby diapers waste can be recycled biologically. The objective of this study is to know the decomposition process of disposable baby diapers with organic waste into compost fertilizer according to the fertilization standard. This was an experimental study conducted by dividing 5 treatment groups, namely: P1 as control, P2 with the ratio of 20:80, P3 with the ratio of 40:60, P4 with the ratio of 60:40, and P5 with the ratio of 80:20. During the composting process the observations were conducted to the measurement variables of temperature, humidity, volume reduction and pH and final analysis of compost fertilizer. The study results showed that the highest mean of temperature was 53.3°C occurred at the beginning of the treatment and it was gradually decreased, then the mean of composting moisture persisted at 76%-100% until the third week of the composting process and decreased to 4.43% in P1 and 25.71% in P5 in the last week of composting. The largest volume reduction occurred in P1 group that was equal to 10.5 liter, whereas the volume reduction in P5 group was 8.6 liter. The highest pH of 8 occurred in all treatments except P5 and there was only an effect of diapers on the composting humidity with p = 0.000. The quality of the compost produced has met the composting standard based on SNI No. 19-7030-2004 with the best ratio in P3 group, so it can be used for compost fertilizer material as a real alternative to 3R system.

Keywords: diapers, compost, Takakura

INTRODUCTION

Population growth and changes in community consumption patterns lead to increasingly diverse volumes, types and characteristics of waste. The further impact of increased human activity is increased amount of waste. If there is no human awareness to process it, then waste will become a serious problem. In order to avoid pollution or disaster, the waste, especially organic waste, can be managed at the source. [1]

Good and appropriate waste management may reduce environmental impacts and can overcome the problem of lack of artificial fertilizer needs. To deal with the waste problem, an easy, inexpensive and efficient technology needs to be applied, one of which is to use the technology of recycling waste into compost. [2]

Composting does not only solve waste disposal problem, but can also recycle waste into useful products and even adds value since compost has high economic value because it can maintain and increase soil fertility. Without compost, the efficiency and effectiveness of nutrient absorption of plants from the soil will not run smoothly because it is strongly influenced by the content of organic matter in the soil. [3]

Along with the development of technology, the community lifestyle has changed such as the use of disposable diapers for toddlers that has replaced cloth diapers because it is considered more practical for toddlers and housewives regardless of the impact on the environment.
Many disposable diapers waste are sent to landfills and are dumped carelessly, because there is no alternative processing available because of the mixture of organic and inorganic composition in them. The increasing use of disposable diapers will cause new problem, namely environmental pollution. Nowadays disposable diapers are thrown away and not used. Even though in terms of technology and economy, disposable diapers can be managed and used.\[4\,5\]

Disposable diapers are usually regarded as non-biodegradable waste which is problematic because they are made of sodium polyacrylate molecules. Sodium Polyacrylate is a polymer that is widely used in various products. The polymer compound has the ability to absorb as many as 200 - 300 times of its mass in water.\[6\]

However, because of its high cellulose content, disposable diapers waste can be recycled biologically to obtain the nutrients contained in it.\[5\]

Although disposable diapers contain poly acrylate compounds which are difficult to be decomposed, but when they are wet and filled with water, the polymer is easily broken so that they are easily decomposed. The presence of a water molecule inside disposable diaper makes the polymer compound is easier to cut into small pieces.\[6\]

Therefore, a decomposing process can be carried out using the composting method. The composting was done in a way that has been commonly used by the community as a solid waste processing namely the composting method using the Takakura system.\[4\]

Takakura method has several advantages compared to other methods, which are practical because it is suitable for use on a small scale (household), does not require spacious area in its implementation, easy to conduct because the waste produced can be directly processed at any time without special treatment, and does not smell because the process is through a fermentation process, not decomposition.\[2\]

From the description above, it is necessary to conduct a study on the possibility of using diapers as compost and to obtain the ideal conditions for the continuity of the composting process to produce the compost in accordance with the compost standard for fertilization.

**MATERIALS AND METHODS**

Experiment on the decomposition of disposable diapers with comparison group was carried out in the Workshop on the Department of Environmental Health of the Health Polytechnic of Ministry of Health of Aceh in May to September 2017. The subjects used were disposable baby diapers that have been used to retain babies’ and children’s urine without feces, taken in an absorbent section located between two sheets of non-woven fabric as much as 24 liters or 0.024 M3 for 4 treatment groups which were be mixed with fermentation seed and organic waste.

Diapers were obtained from 5 toddlers who had previously been given new diapers with the same brand. The study procedure began with making a starter of microorganisms or decomposers made in 2 types of solutions, namely starter with sugar solution and starter with salt solution, then making Seed Fermentation from two ingredients, namely rice husk and bran with a ratio of one to one mixed with both starter solutions which had been previously made to reach moisture of 40-60% and the results were left for 5-7 days.

Composting process was done by inserting Takakura compost seeds into each basket until 60% of basket volume, organic waste and disposable diapers with a ratios of diapers and organic waste of P1 = 0:100, P2 = 20:80, P3 = 40:60, P4 = 60:40, P5 = 80:20. After stirring, a black cloth was placed over each basket then the baskets were covered tightly and stored in the shade, by avoiding direct sunlight for 90 days, measurements were taken every day to note temperature, moisture, volume reduction, color and pH. When the compost finished, two thirds of it was taken then was moved
into a sack and was left for 2 weeks for normalization process. Then the compost was taken to be tested for macro nutrients and bacteriological content in the laboratory including the ratio of C/N, N, P, K, Zn, organic matter and analysis of Fecal coli bacteria.

**RESULTS**

1. Composting Temperature

   A drastic increase in composting temperature occurred on the second and third days of composting which reached 61°C from the initial temperature of 32°C, then the temperature gradually decreased until the 20th day of composting until it reached a stable temperature (32°C - 27°C) on the 90th day of composting process as shown in figure 1:

   ![Figure 1. Graph of temperature changes for 90 days of disposable diapers composting process in organic waste using Takakura method.](image)

   There was no significant difference (p=0.934) between each treatment of disposable diapers composting on the organic waste composting temperature using Takakura method.

2. Composting Moisture

   The increase in moisture to 100% on the first day to the third day of composting occurred in treatments I, II, III and IV while treatment V showed 100% moisture since the first day of treatment. Then treatment I showed a decrease in moisture faster than the other treatments which began on the 10th day of 100% moisture until it reached the lowest moisture of 3% on the 90th day of treatment, while treatment V showed a decrease from 100% on the 40th day of treatment until it reached the lowest moisture of 25% on the 90th day of treatment (figure 2)

   ![Figure 2. Graph of changes in moisture for 90 days the process of disposable diapers composting (organic diapers) using Takakura method.](image)
There was a significant difference (p=0.000) in the five treatments for disposable diapers composting on the moisture of organic waste composting using Takakura method. There were significant differences between P1 group with P3, P4 and P5 groups, then P2 group with P3, P4 and P5 groups then P3 group with P4 and P5 groups (p<0.05), except between groups P1 with P2 and groups P4 with P5 (p>0.05).

3. Composting Volume Reduction

The composting volume reduction was stable in all treatments. The largest number of volume reduction occurred in weeks I, II and III of composting with the average difference per week of 2.38 liters. In treatment I the amount of volume reduction from week I to week XIII of composting was 10.5 liters, while in treatment V the amount of volume reduction from week I of composting to week XIII of composting was 8.6 liters (figure 3).

![Figure 3. Graph of volume changes during the process of disposable diapers composting in organic waste using Takakura method.](image)

There was no significant difference (p=0.306) between each treatment of disposable diapers composting on the change in composting volume of organic waste using Takakura method.

4. Composting pH

All treatments showed a decrease in pH from the start of composting until they rose again in the middle of the week of composting, then the pH returned to a normal pH of 7 from the week XI of composting to the week XIII of composting. The highest pH of 8 occurred in all treatments except treatment 5 in week I to week VIII (figure 4).

![Figure 4. Graph of changes in pH during the process of disposable diapers composting in organic waste using Takakura method.](image)
There was no significant difference (p=0.412) between each treatment of disposable diapers composting on the organic waste composting pH using Takakura method.

5. Quality of Compost

### DISCUSSION

1. Composting Temperature

In treatment 1 without the addition of disposable diapers experienced the slowest temperature increase compared to other treatments, this also occurred in the treatment with the addition of leachate and MOL, wherein without treatment the thermophilic phase took longer than the variation with the addition of leachate and MOL. [8]

Temperature is one indicator in breaking down organic matter. The achievement of the thermophilic phase (40-65 °C) is due to the height of the compost pile. The appropriate height of compost pile is 1-1.2 meters and the maximum height is 1.5-1.8 meters. Furthermore, after passing through the thermophilic phase, the compost pile has a decreased temperature again at the mesophilic temperature. [9]

In all treatments the highest temperature did not exceed 61°C because bacteria become inactive for more than 2 hours at temperature above 60°C and aerobic bacteria become slow during the composting process. [10]

Degradation of organic waste and disposable diapers showed the initial thermophilic phase, where the temperature reached up to 60°C. This is necessary because increasing temperatures can eliminate pathogenic bacteria in disposable diapers. [11]

Aerobic composting will lead to a temperature increase quite quickly during the first 3-5 days and the temperature of the compost can reach 55-70°C, at this temperature the microorganisms can be tripled compared to temperatures less than 55°C. The enzyme produced also the most effective in decomposing organic matter at this temperature. [12]

The compost temperature in each treatment relatively showed a similar tendency, after which it showed a downward tendency to reach the temperature of 30°C on the 13th day. The temperature of the treatment was relatively stable after the 13th day in the range of 29-31°C. [13]

2. Composting Moisture

There was a significant difference (p=0.000) among the five treatments for disposable diapers composting on the moisture of organic waste composting using Takakura method, this occurred due to the Sodium Polyacrylate contained in disposable diapers which has the ability to absorb as much as 200-300 times of the mass in water. [6] Thus, the more composition of disposable diapers used in the treatment of organic waste composting, the higher the moisture content that occurs.

<table>
<thead>
<tr>
<th>No</th>
<th>Parameter</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
<th>SNI</th>
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<tbody>
<tr>
<td>1</td>
<td>Water content (%)</td>
<td>11.70</td>
<td>14.74</td>
<td>22.34</td>
<td>19.14</td>
<td>17.70</td>
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</tr>
<tr>
<td>2</td>
<td>Temperature (°C)</td>
<td>29.50</td>
<td>29.50</td>
<td>30.00</td>
<td>30.00</td>
<td>29.50</td>
<td>Groundwater temperature</td>
</tr>
<tr>
<td>4</td>
<td>pH</td>
<td>7.34</td>
<td>7.49</td>
<td>7.49</td>
<td>7.39</td>
<td>7.30</td>
<td>6,80 - 7.49</td>
</tr>
<tr>
<td>5</td>
<td>Organic Ingredients (%)</td>
<td>51.65</td>
<td>53.30</td>
<td>47.50</td>
<td>45.59</td>
<td>40.10</td>
<td>27 - 58</td>
</tr>
<tr>
<td>6</td>
<td>Nitrogen (%)</td>
<td>2.03</td>
<td>2.17</td>
<td>2.09</td>
<td>2.14</td>
<td>2.08</td>
<td>&gt;0.40</td>
</tr>
<tr>
<td>7</td>
<td>Phosphor P2O5 (%)</td>
<td>8.75</td>
<td>8.35</td>
<td>7.81</td>
<td>8.94</td>
<td>8.44</td>
<td>&gt;0.1</td>
</tr>
<tr>
<td>9</td>
<td>Potassium K2O2 (%)</td>
<td>0.79</td>
<td>0.76</td>
<td>1.03</td>
<td>0.59</td>
<td>0.51</td>
<td>&gt;0.2</td>
</tr>
<tr>
<td>10</td>
<td>Zinc (mg/Kg)</td>
<td>25.63</td>
<td>33.69</td>
<td>13.2</td>
<td>13.44</td>
<td>40.13</td>
<td>&lt;500</td>
</tr>
<tr>
<td>11</td>
<td>Fecal coli (MPN/gr)</td>
<td>&gt;2400</td>
<td>&gt;2400</td>
<td>460</td>
<td>&gt;2400</td>
<td>1100</td>
<td>&lt;1000</td>
</tr>
</tbody>
</table>

The quality of compost produced met the composting standards based on SNI No. 19-7030-2004 except for color parameter and different amounts of Fecal coli, while groundwater temperatures ranged from 27 - 31 °C in the treatment location (table 1).
During the composting process there was no addition of water to all treatments, only based on the initial moisture so that the moisture dropped gradually and surely, the greatest decrease in moisture occurred in treatment I without disposable diapers. This is not in line with the study conducted by Recep Külcü in Turkey who used livestock manure and greenhouse waste as compost material, wherein the compost moisture in each treatment decreased faster. So, to keep the composting process running optimally the treatment with a moisture value below 55% was watered, and the moisture level was set above 60%. During the process, it was observed that changes in moisture levels did not differ significantly from each other. [14] Optimal moisture ranges from 40-60%, more than that or too wet can inhibit the composting process, and will cause an unpleasant odor. [15] However, along with the duration and high temperature of the outside air during the composting process, the optimum moisture cannot be maintained. Considering that the composting material used had high moisture and room air temperature during the composting process was around 30ºC, so Takakura method was chosen for the composting process of disposable diapers because this method is very suitable for use in tropical regions of Indonesia with temperatures of 27ºC - 35ºC and on average it reaches 31ºC [16] so that the water content contained in disposable diapers can be reduced to the maximum.

3. Composting Volume Reduction
Volume reduction occurred due to the process of decomposition by microorganisms involved in the composting process. Microorganisms came from starters made from yeast and sugar which were then mixed with fermentation seed. Yeast microorganisms include saprophytes, living on organic matter from dead plants or animals. The substance in which it grows is called an organic substrate. Yeast contains protease, amylase and lipase enzymes and has the effect of breaking down proteins, carbohydrates and fats. [13] The composting process of Takakura basket style is an aerob composting process in which air is needed and oxygen is an important intake in the growth process of microorganisms that break down waste into compost. The media needed in the composting process is by using a hollow basket, filled with materials that can provide comfort for microorganisms. [17] The high reduction of volume in the first week was due to the presence of mesophilic microorganisms that function to reduce the particle size of organic matter. Another cause was the relatively large availability of organic materials that are easily decomposed by microorganisms that allow the proliferation of microorganisms that decompose the organic material. [18] The low volume reduction in treatment 5 was due to the large proportion of disposable diapers containing high cellulose of 35% and Sodium Polyacrylate or Superabsorbent polymer (SAP) of 33% in compost [19] so that the material was slowly decomposed by microorganisms.

4. Composting pH
pH or acidity degree of the material at the beginning of composting was generally acidic to neutral. The degree of acidity at the beginning of the composting process decreased due to the number of microorganisms involved in composting process that converted organic matter into organic acid. In the next process, other types of microorganisms converted organic acids that had been formed so that the material had a high degree of acidity and closed to neutral. Too high degree of acidity will cause the nitrogen element in the compost to turn into ammonia (NH3), whereas in an acidic state it will cause some microorganisms to die. [12] At the initial stage, the composting pH is in acidic condition. At this stage there is a process of forming organic acids, locally causing pH to be in acidic condition. Acidic conditions will cause fungal growth and will decompose lignin and cellulose in compost material. Furthermore, the pH gradually increases. This occurs because of the
ammonia formation process during the composting process of compounds that have nitrogen content. In addition, if anaerobic condition develops during the composting process, organic acids will accumulate. Adding air or periodic turning process has a role in reducing the acidity of the compost. [20] However, differences in pH values obtained from compost of disposable diapers did not have an impact on plant growth. [11]

5. Quality of Compost

All composts produced had the quality that met the composting standards based on SNI No. 19-7030-2004 except for the parameters of color and different amounts of Fecal coli. This difference was due to the use of fermentation seed from the ingredients of bran and rice husk, so the compost produced was brown. This difference can be attributed to the heterogeneity of the initial organic matter and several possible small differences due to treatment in the composting process such as the turning or stirring the compost and normalization process of compost. [15]

CONCLUSION

Fertilizer from the decomposition process of disposable diapers processed with the Takakura method were stable and had a good quality based on SNI. [20] The compost had a higher water content which was 22.31% for P3, high organic matter content up to 53.30% for P2 and total nitrogen content that reached 2.17% for P2 and C/N ratio was in the range of 10-20. Treatment 3 with the ratio of 60:40 was the best way to mix organic waste and disposed diapers for the composting process using the Takakura method, so that it will produce the final outcome of the composting process with high-quality compost that will be useful in agriculture. It should be noted that the mixing ratio of organic waste with disposable baby diapers to be used due to the study results showed that the quality of compost produced did not show a direct proportionality with the number of disposable diapers added.

REFERENCES


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Factors That Influence the Low Participation of Mothers in Early Detection of Ca Cervix in Manokwari District Papua Barat Province

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ABSTRACT

Background: Cervical cancer is the first cancer in women. Early detection efforts carried out by the government through Puskesmas services including in Manokwari Regency and the achievement of participation in examining cervical cancer is still low which is influenced by age, education, work, socio-economic, knowledge, attitudes and family support.

Objective: To find out the lack of participation of mothers in the detection of Ca Cervix in Manokwari District, Papua Barat Province.

Research Methods: Observational analysis carried out in Sangggeng, Amban, Wosi, Sowi, Pasir Putih Community Health Centers was 575 married people with a total sample of 85 people conducted in September 2018. Data were obtained using questionnaires and analyzed using chi square, odds ratios and logistic binary regression.

Results: Factors that influence the participation of Ca Cervix examination in Papuan mothers in Manokwari Regency are age (p-value = 0.004; RP = 1.514; CI95% (1.146 - 2.000), occupation (p-value = 0.018; Rp = 0.698; CI95% (0.514 - 0.947), socio-economic (p-value = 0.002; Rp = 1.546; CI95% (1.162 - 2.057), knowledge (p-value = 0.004; RP = 1.486; CI95% (1.187 - 1.860), attitudes (p-value = 0.042; RP = 1.339; CI95% (1.048 - 1.711). Factors that have no effect on Ca. Cervix examination participation Papuan mothers in Manokwari District are family support (husband) (p-value = 1.00; RP = 0.966; CI95% (0.736 - 1.266).

Factors that have no effect on Ca. Cervix examination participation Papuan mothers in Manokwari Regency in Ca Cervix examination in Manokwari Regency.

Keywords: Low Participation Papuan Mother To Early Check up Ca Cervix

1. INTRODUCTION

Cervical cancer is one of the most frightening cancers for women which attacks the lower part of the uterus which protrudes or protrudes into the vaginal cavity. Uterine cancer has the greatest potential at the age of 35-55 years (Emilia 2010; Nurcahyo, 2010). Worldwide, the number of people with this killer disease reaches 2.2 million per year. Cervical cancer ranks first in the number of cancer cases in developing countries, while in developed countries only ranks 10th. This means that the level of understanding and information about this disease is quite important in an effort to reduce the mortality caused by it (Nurcahyo, 2010) Cervical cancer is a cancer that attacks many women.

In developing countries most 80% are infected with HPV, meaning the incidence of new infections in developing countries is on average 61 per 100,000 women. This figure is almost six times the incidence of cervical cancer in women in developing countries in the past 5 years, globally it is estimated that 1,401 cases of cervical cancer have been diagnosed from that number of developing countries with cervical cancer totalling 1,064,000 cases.

The Indonesian Ministry of Health stated that to date there are an average of 100 cases of uterine cancer every 100 thousand Indonesians per year. While the Indonesian cancer foundation data (2007)
mentions more "great" numbers, five hundred thousand women in Indonesia are detected as having cervical cancer every year and half of them die from the cancer. Indonesia ranks second in the cause of female mortality due to cervical cancer, estimated the incidence of cervical cancer in Indonesia (age-standardized rate (ASR) 15.7 per 100,000) almost the same as the incidence in Southeast Asia and Malaysia, in Indonesia It is estimated that 15,000 new cases of cervical cancer occur annually while the mortality rate is estimated at 7,500 cases per year (Emilia, 2010).

Based on research conducted by WHO, every day in Indonesia there are 40 women diagnosed and 20 women dying of cervical cancer. The number of cervical cancer cases in Indonesia is due to lack of knowledge about cervical cancer so that public awareness for early detection is still low. The coverage of IVA examination in West Papua Province in early detection of cervical cancer in 2014 is 5,309 (1.78%) of the target number of 119,863 women (Ministry of Health, 2017). The data shows that the examination of early detection of cervical cancer, including in Manokwari Regency, was low at 0.78%. In addition, the low examination of cervical cancer was also found in the Sanggeng, Amban, Wosi, Sowi, Pasir Putih Community Health Centers as the most populated Puskesmas in Manokwari Provnsi West Papua and there was still a lack of awareness of Papuan women to examine cervical cancer. Based on the preliminary study, the examination of IVA by women of childbearing age in the Sanggeng Health Center in 2016 was 85 people, in 2017 there were 185 people and the period of January - June 2018 no IVA examination. Based on the data above, the researchers are interested in examining the factors that influence the lack of participation of mothers in early detection of cervical cancer in Manokwari Regency, West Papua Province.

2. MATERIALS AND METHODS
2.1 Types of Research
This research is a quantitative research with a cross sectional study approach, which is to determine the influence of two or more variables with data collection carried out simultaneously at one time (Notoatmodjo, 2012).

2.2 Location and Time of Research
1. Research Location
The research was conducted in five health centers, namely Sanggeng, Amban, Wosi, Sowi, Pasir Putih, Manokwari Regency.
2. Research Time
This research was conducted in July 2018

2.3 Population and Samples
1. Population
This population is an object / subject that has certain qualities and characteristics set by the researcher to be studied and then draw conclusions (Sugiyono, 2013). The population in this study were all women of childbearing age who were visited at the BKIA Room in Sanggeng, Amban, Wosi, Sowi, Pasir Putih Community Health Centers, as many as 575 people who had married as many as 575 people.
2. Sample size
According to Nototatmodjo (2012) the sample is a portion of the population that is considered representative. The sample size was obtained by 85 people.

3. RESULTS
Bivariate Analysis
a. Effect of age on maternal participation in early detection of cervical cancer

Table 1. Effects of Age on Participation Early examination of cervical cancer in Manokwari District

<table>
<thead>
<tr>
<th>No</th>
<th>Age</th>
<th>Participation Early examination of cervical cancer</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>Not</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>1</td>
<td>&lt; 30 year</td>
<td>39</td>
<td>88.6</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>≥ 30 year</td>
<td>24</td>
<td>58.5</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>63</td>
<td>74.1</td>
<td>22</td>
</tr>
</tbody>
</table>

p-value = 0.004; RR = 1.514; CI95% (1.146 – 2.000)

Table 1 shows that of 44 respondents aged <30 years as many as 39 people (88.6%) did not carry out an early examination of the cervix and as many as 5
people (44%) did an early examination of cervical cancer. Mothers aged >30 years from 41 respondents as many as 24 people (58.5%) did not do a cervical examination and as many as 17 people (41.5%) did an early examination of cervical cancer. Chi square statistical test results at 95% significance value ($\alpha = 0.05$) obtained $p$-value 0.004 or $p < \alpha (0.05)$, which means there is an influence of age on the lack of maternal participation in conducting early cervical cancer examination in Manokwari Regency. When viewed from the value of $\text{RP} = 1,514$; CI95% (1,146 - 2,000) interpreted that mothers aged <30 years at risk of not participating in early examination of cervical cancer by 1,514 times compared to mothers aged> 30 years.

**b. Effects of Education on Participation Early examination of cervical cancer in Manokwari Regency**

Table 2 shows that of the 48 respondents who were low educated as many as 43 people (89.6%) did not carry out an early examination of cervical cancer and as many as 5 people (10.4%) did an early examination of cervical cancer. The respondents who were highly educated from 37 respondents as many as 20 people (54.1%) did not carry out an early examination of cervical cancer and as many as 17 people (45.9%) did an early examination of cervical cancer. The results of the chi square statistical test on the significance value of 95% ($\alpha = 0.05$) obtained $p$-value 0.001 or $p < \alpha (0.05)$, which means there is an educational effect on the lack of maternal participation in conducting an early examination of cervical cancer in the district Manokwari. The results of the value of $\text{RP} = 1.657$; CI95% (1,213 - 2.265) interpreted that mothers with low education were at risk of not participating in the early examination of cervical cancer by 1,657 times compared to mothers who were highly educated.

**c. Effects of Work on Participation Early examination of cervical cancer**

Table 3 shows that of 34 respondents who worked as many as 20 people (58.8%) did not carry out an early examination of cervical cancer and as many as 14 people (41.2%) did an early examination of cervical cancer. Respondents who did not work from 51 respondents as many as 43 people (84.3%) did not carry out an early examination of cervical cancer and as many as 8 people (15.7%) did an early examination of cervical cancer. The results of the chi square statistical test on the significance value of 95% ($\alpha = 0.05$) obtained $p$-value 0.018 or $p < \alpha (0.05)$, thus there is no significant effect of work on the lack of maternal participation in conducting an early examination of cervical cancer in Manokwari Regency. When viewed from the value of $\text{RP} = 0.698$; CI95% (0.514 - 0.947) below the number 1, so that the work is not meaningful towards maternal participation in the use of cervical cancer.

**d. Socio-Economic Influence on Participation Early examination of cervical cancer**

Table 4 shows that of 100 socio-economic respondents of 63 respondents as many as 45 people (45.9%) did not carry out an early examination of cervical cancer and as many as 55 people (54.1%) did an early examination of cervical cancer. The results of the chi square statistical test on the significance value of 95% ($\alpha = 0.05$) obtained $p$-value 0.002 or $p < \alpha (0.05)$ which stated that there was a significant effect of socio-economic on the lack of maternal participation in conducting an early examination of cervical cancer in the district Manokwari. The results of the value of $\text{RP} = 1.546$; CI95% (1,162 - 2.057) below the number 1, so that the socio-economic is not meaningful towards maternal participation in the use of cervical cancer.
Table 4 shows that of the 45 respondents who were less socio-economically as many as 40 people (88.9%) did not carry out an early examination of cervical cancer and as many as 5 people (11.1%) did an examination of early detection of cervical cancer. Respondents who were socio-economic enough from 40 respondents as many as 23 people (57.5%) did not carry out an early examination of cervical cancer and as many as 17 people (42.5%) did an examination of early detection of cervical cancer. Chi square statistical test results at 95% significance value ($\alpha = 0.05$) obtained $p$-value 0.002 or $p < \alpha$ (0.05), thus there is a significant socio-economic influence on the lack of maternal participation in conducting an early examination of cervical cancer in Manokwari Regency. When viewed from the value of $\text{RP} = 1.546$; $\text{CI95\%} (1.048 - 1.860)$ which is interpreted to mean that mothers who are less risky socioeconomic do not participate in the early examination of cervical cancer by 1,546 times compared to mothers who are socioeconomic enough.

### Table 5. Effects of Knowledge on Participation Early examination of cervical cancer in Manokwari District

<table>
<thead>
<tr>
<th>No</th>
<th>Knowledge</th>
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</tr>
<tr>
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<td></td>
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<td>%</td>
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</tr>
<tr>
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<td>Less</td>
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</tr>
<tr>
<td>2</td>
<td>Good</td>
<td>23</td>
<td>52.3</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td>64</td>
<td>74.1</td>
</tr>
</tbody>
</table>

$p$-value = 0.004; $\text{RP} = 1.486$; $\text{CI95\%} (1.187 - 1.860)$

Table 5 shows that of the 23 respondents who were less knowledgeable about participating in the early stage of cervical cancer screening as many as 21 people (47.7%) and as many as 2 people (9.1%) did an early examination of cervical cancer. Knowledgeable respondents from 43 respondents as many as 23 people (52.3%) did not carry out an early examination of cervical cancer and as many as 20 people (90.9%) did an early examination of cervical cancer. The chi square statistical test results at 95% significance value ($\alpha = 0.05$) obtained $p$-value 0.005 or $p < \alpha$ (0.05), thus there is a significant effect of knowledge on the lack of maternal participation in conducting early cervical cancer examinations in Manokwari Regency. When viewed from the value of $\text{RP} = 1.486$; $\text{CI95\%} (1.187 - 1.860)$ which was interpreted to mean that mothers who were less at risk of not participating in the early examination of cervical cancer were 1,486 times compared to well-informed mothers.

### Table 6. Effects of Attitudes Against Participation Early examination of cervical cancer in Manokwari District

<table>
<thead>
<tr>
<th>No</th>
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<td>%</td>
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<td></td>
<td><strong>Total</strong></td>
<td>63</td>
<td>74.1</td>
</tr>
</tbody>
</table>

$p$-value = 0.042; $\text{RP} = 1.339$; $\text{CI95\%} (1.048 - 1.711)$

Table 6 shows that of the 37 respondents who did not support as many as 32 people (86.5%) did not carry out an early examination of cervical cancer and as many as 5 people (13.5%) did an early examination of cervical cancer. Respondents who were supportive of 48 respondents as many as 31 people (64.6%) did not carry out an early examination of cervical cancer and as many as 17 people (35.4%) did an early examination of cervical cancer. The results of the chi square statistical test on the significance value of 95% ($\alpha = 0.05$) obtained $p$-value 0.042 or $p < \alpha$ (0.05), thus there is a significant influence on the lack of maternal participation in conducting early cervical cancer examination in Manokwari Regency. When viewed from the value of $\text{RP} = 1.339$; $\text{CI95\%} (1.048 - 1.711)$ interpreted that mothers who are not supportive are at risk of not participating in the early examination of cervical cancer by 1,339 times compared to mothers who are supportive.
Table 7. Effects of Family Support (Husband) on Participation Early examination of cervical cancer in Manokwari District

<table>
<thead>
<tr>
<th>No</th>
<th>Husband Support</th>
<th>Participation Early examination of cervical cancer %</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not</td>
<td>Yes</td>
<td>Not</td>
</tr>
<tr>
<td>1</td>
<td>Not support</td>
<td>21</td>
<td>8</td>
<td>27.6</td>
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<tr>
<td>2</td>
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<td>14</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>63</td>
<td>22</td>
<td>25.9</td>
</tr>
</tbody>
</table>

*p-value = 1,000; RP = 0.966; CI95% (0.736 – 1.266)

Table 7 shows that of the 29 respondents who did not receive family support as many as 21 people (72.4%) did not carry out an early examination of cervical cancer and as many as 8 people (27.6%) did an early examination of cervical cancer. Respondents who received family support from 56 respondents were 42 people (75%). Chi square statistical test results at 95% significance value (α = 0.05) obtained p-value 1,000 or p > α (0.05), thus there was no significant effect of husband's support on the lack of maternal participation in early cervical cancer examination. In Manokwari Regency. When viewed from the value of RP = 0.966; CI95% (0.736 - 1.266) below number 1 interpreted that husband's support is not a risk factor for participation in early cervical cancer examination.

4. DISCUSSION

4.1 Effects of age on participation in early cervical cancer examination

The results showed that there was a significant effect of age on participation in early examination of cervical cancer in Manokwari Regency. This study is in line with previous studies by Dewi (2016), that there was an influence of age on participation in early examination of cervical cancer. Age is a long time to live or exist since birth (Handayani and Suryani, 2013). According to Ropitasari (2014) at the age of married women it is the right age to do cervical cancer prevention early on. Whereas at an early age the early tendency to be more careful in taking action on their health and middle-aged adults who are more abstract thoughts. In general, the level of maturity in old age is more likely to carry out various healthy behaviors such as attending a health check up regularly.

Respondents who did not participate in conducting an early examination of cervical cancer at the age of <30 years were 39 people (88.6%) and as many as 24 people (58.5%) were> 30 years old. From the results of the prevalence ratio test interpreted that mothers <30 years of age tend not to participate in early examination of cervical cancer. This study agrees with the theory according to Notoatmodjo (2012), that the better the knowledge the better the actions taken on his health. In this case, well-informed fertile-age women, many are willing to participate in conducting an early examination of cervical cancer.

Individuals with age <30 are not a few of those who are unable to reach maturity. This is due to the many problems it faces and is unable to overcome them. Early adulthood can develop the desire to find out new roles. When associated with health knowledge, this reflects a person's maturity to make decisions in attitudes and preventive actions of an illness (Damailia, 2015). The increasing age of the individual, the level of ability, the power to think, and work will be more mature, so that the increasing age of women will have a higher level of alertness to prevent the occurrence of cervical cancer (Pangesti, 2015).

The results of this study are in line with those of Dewi (2016), that most women of childbearing age >30 years of age are more willing to participate in early examination of cervical cancer because at that age more have good knowledge. This agrees with according to Mubarak (2011) that at the age of adolescents, the power of capture or the power of thought someone more easily capture the information obtained compared to someone older. But this is influenced by the information received.

4.2. Effect of education on participation in early cervical cancer examination

The results showed that there was a significant effect of education on the
participation of early cervical cancer examination in Manokwari District. The research is in line with previous research by Finaninda (2017), revealing that there is an educational influence on women's participation in early cervical cancer examinations. Respondents who did not participate in conducting an early examination of cervical cancer in Sanggeng Community Health Center were 43 people (89.6%) higher than those with high education as many as 20 people (54.1%). The prevalence ratio test results obtained the value of \( RP = 1.657; \text{CI}95\% (1.213 - 2.265) \) that mothers with low education tend not to participate in the early examination of cervical cancer by 1,657 times compared to mothers who are highly educated. Respondents with high school education are respondents who are already included in the middle level education, making it easier to digest a new experience and knowledge. Formal education functions as a means of empowering individuals to increase knowledge and develop their potential.

The results of this study are in line with the research conducted by Dewi (2016) that women of childbearing age who participated in conducting an early examination of cervical cancer were mostly in knowledgeable mothers who had more high school and tertiary education, but in early examination of cervical cancer the majority were educated mothers low. Education is the process of changing attitudes and behavior of a person or group of people in an effort to mature people through teaching and training efforts (Prayoto, 2014). According to Notoadmodjo (2012), the factors that influence knowledge include education and interests and information. The higher a person's education, the easier it is for them to receive information, and ultimately the more knowledge they have. But it needs to be stressed that someone who is low-educated does not mean low knowledge.

The assumption that researchers are inferior to mothers who are willing to take an early examination of cervical cancer is participation of early cervical cancer examination in Manokwari District. The research is in line with previous research by Finaninda (2017), revealing that there is an educational influence on women's participation in early cervical cancer examinations. Respondents who did not participate in conducting an early examination of cervical cancer in Sanggeng Community Health Center were 43 people (89.6%) higher than those with high education as many as 20 people (54.1%). The prevalence ratio test results obtained the value of \( RP = 1.657; \text{CI}95\% (1.213 - 2.265) \) that mothers with low education tend not to participate in the early examination of cervical cancer by 1,657 times compared to mothers who are highly educated. Respondents with high school education are respondents who are already included in the middle level education, making it easier to digest a new experience and knowledge. Formal education functions as a means of empowering individuals to increase knowledge and develop their potential.

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The assumption that researchers are inferior to mothers who are willing to take an early examination of cervical cancer is not caused by a lack of knowledge so that a low interest or encouragement to participate in conducting an early examination of cervical cancer. According to Mubarak (2011), one of the low interests of women in conducting health checks is due to lack of knowledge. This was also revealed by Rahmawati (2015) that women who have relatively low education are lacking in developing insights and following new developments, especially in the prevention of an illness (Aisah, 2013). The lower the level of individual education, the lower the interest in examining (Rahmawati, 2015).

Low education has an impact on reasoning power or thinking power so that the information conveyed is incomprehensible, so there needs to be attention from health workers in furnishing information with a language approach that is easily understood and understood by low-educated people.

4.3. Effect of work on early participation in cervical cancer examination

The results showed that there was no significant effect of work on the participation of early examination of cervical cancer in Manokwari District. The results of this study are in line with the research conducted by Ropitasari (2014) that most of the mothers who did not work mostly did not participate in conducting an early examination of cervical cancer. Work is something that is done to earn a living, make a living. Today women have the opportunity to work openly. The basic reason for a woman to have a marriage is not the same as one another. The reason that is commonly found is because of financial needs to enrich personal experience and knowledge, achievement (Prayoto, 2014).

Respondents who did not participate in the early examination of cervical cancer were higher in respondents who did not work as many as 20 people (58.8%) lower than respondents who did not work as many as 43 people (84.3%), but this was not meaningful from the results of the RP value = 0.698; CI95\% (0.514 - 0.947) does not include 1, so the work is not meaningful for
the action in participating in conducting an early examination of cervical cancer.

The work of women of reproductive age is more in private and civil servants, but according to Finaninda's research (2017), as many as 10% of women of childbearing age are working. The majority of them participate more in conducting an early examination of cervical cancer than those who do not work, this is related to the income earned. So that mothers who do not work and have more time have time, but the distance of homes that are far away and low family income can influence participation in early examination of cervical cancer.

Work has a work environment that can provide experience and knowledge directly or indirectly, so many housewives who only relate to people around the house don't know and participate in conducting an early examination of cervical cancer (Wahyuningsih, 2015). Based on the work of mothers in Sanggeng Public Health Center, 34.1% were willing to conduct cervical cancer examination.

According to Theresia, Karningsih and Delmaifanis (2012), the work environment allows WUS to be informed about early detection of cervical cancer by the method of early examination of cervical cancer. In addition, work is associated with purchasing power so that women who work will be more independent and easier to check their health. From the results of the study, researchers assumed that women who did not work had more free time that could be used to make IVA visits, mothers who did not work did not mean they could not manage their time to participate in conducting an early examination of cervical cancer. This is in accordance with the opinion according to Notoatmodjo (2012), the existence of work will cause someone to spend a lot of time and energy to complete the work that is considered important.

4.4 Socio-economic influence on participation in early cervical cancer examination

The results of the study showed that there were significant socio-economic influences on participation in early cervical cancer examination in Manokwari District. From the results of the prevalence ratio test (RP) = 1,546; CI95% (1,162 - 2,057) which is interpreted to mean that socioeconomic mothers are less likely to participate in early cervical cancer testing of 1,546 times than those of sufficient socioeconomic mothers. Previous research by Gustiana (2014) in East Java revealed that respondents who had high income had the opportunity to take preventive behavior at 0.64 times compared to low income respondents. According to Sudremi (2007) "income is all of a person's income as a service in the production process. Reply to the suit can be in the form of wages, interest, rent, or profit depends on the factors of production on those involved in the production process. While Suyanto (2008) defines income as a sum of funds obtained from the utilization of the factors of production owned.

 Mothers from Papuan tribes who did not participate in the early examination of cervical cancer in less socio-economic mothers as many as 40 people (88.9%) were higher than respondents who were sufficiently socio-economic as many as 23 people (57.5%). This shows that the higher the socio-economy the better it is participating in the early examination of cervical cancer. This is because social economic mothers make it easy for mothers to access health services and other accommodation related to the utilization of health services.

Early detection in early examination of cervical cancer is given free of charge to patients who follow JKN participation, so that it is not difficult for mothers to participate in conducting examinations. Mothers who have enough who do not participate are due to mothers who are busy at work while those who do not participate in socio-economic mothers are less due to limitations in reaching health services, in this case the costs of transportation and other accommodations when going to health services. So this causes the mother to choose and consider other basic needs as a
result of the mother's low socio-economy to meet family needs. 

4.5. Effect of knowledge on participation in early cervical cancer examination

The results showed that there was a significant effect of knowledge on participation in early cervical cancer examination in Manokwari District. The results of this study are in accordance with Dewi (2016) 's study that knowledge of women of childbearing age on the early examination of cervical cancer in the good category more often participated in the early examination of cervical cancer. Knowledge was lacking in respondents because they did not know that in the IVA screening procedure the results were immediate, only waiting for about two minutes to find out the results. In addition, respondents assume that husbands do not need to be involved in early examination of cervical cancer and do not recognize one of the symptoms of cervical cancer such as vaginal bleeding.

Respondents who did not participate in conducting an early examination of cervical cancer in the respondents who were less knowledgeable were 47.7% lower than respondents who had as much good knowledge and participated in the early examination of cervical cancer as much as 90.9%. This shows that the higher the higher the participation in early cervical cancer examination and from the results of the prevalence ratio test found that respondents who lack knowledge about early examination of cervical cancer have a risk of 9,130 times higher not participating in early examination of cervical cancer compared to knowledgeable respondents less.

This shows that women of childbearing age who are more or less knowledgeable are not willing to take an early examination of cervical cancer because the respondents do not know about the purpose and benefits of early cervical cancer examinations, conditions for taking an early examination of cervical cancer and the involvement of participating husband and health care workers cervical cancer. Based on the observations of the researchers, the conditions in the Sanggeng Health Center area in terms of health personnel resources were sufficient to carry out counseling routinely in each village, because of the 13 villages, all of them already had village midwives. The obstacle is that not all midwives in the village live in the village can be overcome by making an extension schedule. For midwives in the village who have not been trained in IVA so that they are able to carry out counseling, especially regarding early detection of cervical cancer, the IVA method has not been maximized, it can be overcome by conducting training / socialization on early detection of cervical cancer IVA method.

Besides that, it can be the right technique to increase people's knowledge, especially WUS and also their husbands / fathers, so that it is expected that 90% of them will have good knowledge of IVA behavior. With increasing knowledge, it is expected that the target group will want to participate in conducting an early examination of cervical cancer so that it will also increase coverage. To increase the coverage of IVA services can also be done by inviting mothers to take an early examination of cervical cancer. Because based on experience that the majority of women are willing to take an early examination of cervical cancer if invited by officers or health cadres.

4.5. Effect of attitudes toward participation in early cervical cancer examination

The results showed that respondents who did not participate carried out an early examination of cervical cancer with an attitude of not supporting as many as 32 people (86.5%) while in mothers who were supportive as many as 35.4% participated in the early examination of cervical cancer. The results of statistical tests stated that there was a significant influence on the participation of early cervical cancer screening in Manokwari District. When viewed from the value of RP = 1,339; CI95% (1,048-1,711) interpreted that
respondents who were negative about early examination of cervical cancer had a risk of 1,339 times higher not participating in conducting an early examination of cervical cancer compared to respondents who were positive.

The results of this study indicate a significant relationship between attitudes and behavior of early cervical cancer examination. This is in line with the research of Dewi (2016), which states that all women who carry out an examination of early detection of cervical cancer have a positive attitude towards early detection of cervical cancer. This research is also in line with Sarini's research (2011) which says that not all women who are positive conduct an examination of early detection of cervical cancer. Women who are positive about the value of health do not always manifest in real action (behavior), because a positive attitude will be followed by behavior which refers to the experience of others or is based on a lot or a little experience of a person. Being negative about the examination of early detection of cervical cancer, related to knowledge, they are still unfamiliar with it and do not know the purpose and benefits of early examination of cervical cancer.

4.6. Effect of family support (husband) on participation in early cervical cancer examination

The results showed that there was no significant effect of husband support on participation in early cervical cancer examination in Manokwari District. The results of this study are not in line with the research conducted by Dewi (2016) about women's participation in HIV testing. Women who get good social support tend to do early detection of cervical cancer. The social support in question is support from husband, family, friends and community leaders. The amount of support contributions from the closest person or group to strengthen the reason for someone to behave. If a woman does not have the closest person or group who has a good understanding of health, it will indirectly affect the woman's behavior. Therefore information about cervical cancer and the examination of early detection of cervical cancer are not only women who are the main focus, but men are also a very potential target (Sarini, 2011).

Most social conditions in Manokwari District support, but the absence of influence on participation in early cervical cancer testing is due to the influence of the mother herself who wants to take an early examination of cervical cancer so that husband's support is not a risk factor for early cervical cancer examination.

Research conducted by Purba (2011) which states that an important factor in providing encouragement for mothers to carry out an examination of early detection of cervical cancer is the closest people, namely husband and family. But the decision of the mother to follow an early examination of cervical cancer is higher, due to the limitations of the husband getting information about early examination of cervical cancer.

The importance of Puskedsmas health workers in providing husband and family support is very strong in participating in the early examination of cervical cancer by counseling husbands / fathers when there are services, or other activities in each village. In addition, it can coincide with home visits such as neonatal visits, maternal visits, or other home visits, health workers or health cadres providing counseling to their husbands / fathers. But the obstacle is that not all groups of husbands / fathers take part in other meeting activities or activities and not all husbands / fathers are at home when the health officer or cadre provides counseling.

5. CONCLUSION

1. There is a significant influence of age on the participation of early cervical cancer examination in mothers in Manokwari Regency (p-value = 0.004; RP = 1.514; CI95% (1.146 - 2.000).

2. There is a significant influence of education on the participation of early cervical cancer examination in mothers in
Factors That Influence the Low Participation of Mothers in Early Detection of Cervical Cancer in Manokwari District Papua Barat Province

Manokwari Regency (p-value = 0.001; RP = 1.657; CI95% (1.213 - 2.265).
3. There is no significant effect of work on the participation of early cervical cancer examination in mothers in Manokwari District (p-value = 0.018; RP = 0.698; CI95% (0.514 - 0.947).
4. There is a significant socio-economic influence on the participation of early cervical cancer examination in mothers in Manokwari District (p-value = 0.002; RP = 1.546; CI95% (1.162 - 2.057).
5. There is a significant influence of knowledge on the participation of early cervical cancer examination in mothers in Manokwari Regency (p-value = 0.004; RP = 1.486; CI95% (1,187 - 1,860).
6. There is a significant influence on the participation of early cervical cancer in mothers in Manokwari Regency (p-value = 0.042; RP = 1.339; CI95% (1,048 - 1,711).
7. There is no significant influence of family support (husband) on the participation of early cervical cancer examination in mothers in Manokwari District (p-value = 1,000; RP = 0.966; CI95% (0.736 - 1.266).

REFERENCES

- Purba, Evi Misrawaty. 2011. Faktor-Faktor yang Berhubungan dengan Pemeriksaan Papsmear pada Pasangan Usia subur (PUS) di Puskesmas
Belawan Kota Medan Tahun 2011. Skripsi. FKM UI.


- Saifuddin (2002). Ilmu Kebidanan. YBP-SP, Jakarta.


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ABSTRACT

Introduction: The dengue virus is transmitted to man by the bite of the mosquito (*Aedes aegypti* and *Aedes albopictus*). The cases are increasing year on year basis with significant rate of morbidity and mortality in different parts of the country. These cases often present with varied spectrum of clinical signs and symptoms during the course. Recently it has been observed that these classical symptoms are shifting to less common ones with increase in their severity.

Objective: To study the shift in paradigm of clinical presentations and their severity in the cases presenting to this Tertiary Care Hospital.

Materials and Methods: All clinically suspected cases during study period 2016-17, attending different OPDs or admitted to indoor of different clinical departments, were enrolled in this study and their sera samples were subjected to NS1 antigen and IgM antibody ELISA. Of the total 562 suspected cases, 119 cases were positive either by NS1 antigen or IgM ELISA or both.

Results: The majority of these cases were males 92 (77.3%) and the most susceptible age group was 19-25 years followed by 26-35 years. The fever was commonest presentation in 118 (99.2%) cases followed by headache and abdominal pain in 76 (63.8%), myalgia in 52 (43.7%), vomiting in 44 (37%), and joint pain in 36 (30.2%) cases. In present study we observed 89 (74.8%) cases of dengue with fever, 26 (21.8%) cases with hemorrhagic manifestations and 4(3.4%) cases with presentations of shock.

Conclusion: Upon the analysis of the results, it was observed that there is shift in clinical presentations of the cases. Beside fever being the predominant symptom, abdominal pain, headache and vomiting are next common.

Key words: Dengue, NS1 antigen and IgM antibody

INTRODUCTION

Dengue fever has become one of the most important mosquito-borne viral diseases with a steady increase in global incidence including the India. [1] Dengue virus (DENV) is the etiological agent of this condition which belongs to the genus *Flavivirus*, family flaviviridae and has been classified into four (DENV1-4) serotypes. [2] Our country frequently encounters this infection significantly throughout the country especially during and post monsoon, the outbreaks frequency in Uttar Pradesh and Delhi becomes severe. [3]

Dengue has a varied clinical spectrum ranging from asymptomatic disease to undifferentiated fever (or viral syndromes), classical dengue fever (DF), dengue hemorrhagic fever (DHF), or dengue shock syndrome (DSS). [4] The diagnosis is based on serology mainly by NS1 antigen and IgM antibody ELISA. These methods are accurate having high sensitivity and specificity in diagnosis of acute dengue fever. [5] The combination of both types of ELISA enhances the accuracy of results because it encompasses the NS1 protein present in early 3-6 days and further extending to IgM antibody present up to 5-14 days post infection. [6]

The primary clinical signs and symptoms mainly include fever, petechial rashes and bony or joint pain with decreased platelet count. [7] Although these signs and symptoms with corroborative laboratory evidences are most important for making clinical decision for better management of the condition. Although, the clinical picture
gives a clue to the diagnosis but due to paradigmal shift in symptomatology, the patients now frequently present with less common signs and symptoms like headache, vomiting etc. as suggested by few recent studies. Thus, the present study is aimed to analyze this variation in clinical picture of the cases presenting to this Hospital.

MATERIALS AND METHODS

Study design and setting: The present study is a cross sectional study and was conducted at this Tertiary Care Hospital of Western Uttar Pradesh India. All the clinically suspected cases attending different OPDs or/and admitted to indoor of different department of our hospital, were enrolled in this study during study period 2016-17. The blood samples were collected and their sera separated and tested for NS1 antigen and IgM antibody ELISA.

Inclusion criteria:

a) All cases clinically suspected of dengue, visiting OPDs or admitted in this Hospital.

b) Cases who gave consent to participate in this study.

Exclusion criteria:

a) Cases of fever diagnosed for other than dengue like malaria, typhoid, or other febrile illness etc.

b) Suspected cases in which serology was found to be negative.

Laboratory diagnosis: The diagnosis of cases was established by two types of ELISAs, Non Structural Protein 1 (NS1) Antigen (QUALISA Dengue NS1 (Qualpro diagnostics Pvt. Ltd., Goa, India), and IgM antibody capture ELISA (MICROLISA IgM, J. Mitra& Co, New Delhi). All the sera samples were subjected to these ELISAs same day as per the manufacturer’s instructions as described below in brief.

NS1 ELISA

50µL sample diluent was added to each well and 100µL of negative, positive controls were also added followed by serum samples in the corresponding wells. The plate was incubated for 30 minutes at 37°C. It was then washed to remove any unwanted and unbound antigens and blot dried. Further, 100µL of conjugate was added to each well and plate was again incubated for 60 minutes at 37°C followed by washing and drying. Further, 100 µL of substrate was added and plate incubated for 15 minutes in dark at room temperature. Finally, 100µL of stop solution was added and absorbance was read at 450nm.

IgM (MAC) ELISA

100µL of negative and positive controls, calibrator and 100 µL diluted serum samples (1:100) were added to corresponding wells and incubated at 37°C for 60 minutes. The plate was washed five times and dried. Further, 100µL of conjugate was then added and plate incubated for 60 minutes at 37°C. After incubation washing was done followed by 100µL of substrate being added and incubated in dark for 30 minutes at 37°C. Finally, 100µL of stop solution was added and absorbance was read at 450nm.

Statistical Methods: The data entry and results analysis were done with the Microsoft Excel Version 10. All the relevant variables were analyzed by descriptive statistics.

Ethical Approval: This study was approved by University Ethics Committee “408 UPUMS/Dean/2018-19 E.C. No.2017/82”.

RESULTS

A total of 562 clinically suspected cases of dengue were enrolled during study period 2016-17. Out of these, 119 (21.1%) cases were laboratory confirmed on the basis of serological diagnosis either by Non-Structural antigen 1 assay (NS1) antigen or IgM antibody ELISA. Of the total 119 positive cases, the NS1 antigen was positive in 100 (84%) cases and 30 (25.2%) cases were positive for IgM, however, a total 11 (9.2%) cases were also positive by both assays (NS1 antigen and IgM antibody ELISA). The majority of these cases were males 92 (77.3%) and the most common age groups among all cases was 19-25, followed by 26-35 years as observed in this study (Table1).
Of all the 119 seropositive cases, 118 (99.2%) had fever. Only one case didn’t have fever despite it was IgM positive, which might be in early phase of the disease. The next common clinical presentation observed after fever, was headache as seen in 76 (63.8%) cases followed by abdominal pain in 76 (63.8%), myalgia in 52 (43.7%), vomiting in 44 (37%), ascites in 40 (33.6%) and joint pain in 36 (30.2%) cases. The distribution of 15 most common clinical signs and symptoms in terms of frequency of occurrence among these seropositive cases is depicted in Table 2. In this study the average platelet count recorded was 46508/mm$^3$ and range was between 14000-143000/mm$^3$.

In present study we observed 89 (74.8%) cases of DF, 26 (21.8%) cases of DHF and 04 (3.4%) cases of DSS. Thus, total hemorrhagic manifestations were observed in 30/119 (25.2%) cases. Among the spectrum of the symptomatology, commonest hemorrhagic manifestations were presented as body rashes 30/30 (100%), melena in 24/30 (80%) cases, epistaxis 12 (40%) and gum bleeding 12 (40%) cases (Table3).

DISCUSSION
Dengue is an acute viral infection presenting with wide spectrum of clinical presentations, ranging from classical to fatal dengue hemorrhagic fever. [8] WHO estimated that 3.9 billion people, in 128 countries, are at risk the of infection with dengue. The number of cases reported has increased from 2.2 million in 2010 to 3.2 million in 2015 in member states of WHO. [9] The reports from various national surveillance agencies suggest that dengue fever outbreaks from different parts of India have increased in last few years. [10] The outbreaks frequency in some states of North India including Uttar Pradesh and Delhi has become more frequent with dengue fever. [3] Increase in social awareness about dengue, its annual epidemics and availability of rapid diagnostic tools in hospitals have helped in the improved case detection. The present study has attempted to describe the changing trends of clinical profile of dengue infected patients admitted at this Tertiary Care Hospital in rural area of Uttar Pradesh India.

A total of 119 patients were found seropositive during (2016-17) study period; among them, 77.3% were male. The similar frequency of male subjects was reported by many other authors, e.g. one study done by Kale et al., [11] 63% were male, while another study by Karoli et al., [12] 58% were male and 42% female. The male: female ratio was 3.4:1 found in the present study and this is supported by study of Bansal et al. [13] who reported similar ratio of 3:1.

Thus, it might be stated that high number of male cases might be due to their more outdoor activity and more susceptibility to other environmental risks. [14] The most common age groups affected in this study were19-25 years, followed by 26-35 years (Table1). These age groups reflect most active age groups which

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>DHF (n=26)</th>
<th>DSS (n=4)</th>
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</thead>
<tbody>
<tr>
<td>Body Rashes</td>
<td>30 (100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Melena</td>
<td>24 (80%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Epistaxis</td>
<td>12 (40%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Gum bleeding</td>
<td>12 (40%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

**Table 1:** Age wise distribution of seropositive dengue male and female cases

<table>
<thead>
<tr>
<th>Age groups</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-18</td>
<td>14 (11.8)</td>
<td>04 (3-5)</td>
<td>18 (15.1)</td>
</tr>
<tr>
<td>19-25</td>
<td>32 (26.9)</td>
<td>10 (8.4)</td>
<td>42 (35.3)</td>
</tr>
<tr>
<td>26-35</td>
<td>26 (21.8)</td>
<td>07 (5.9)</td>
<td>33 (27.7)</td>
</tr>
<tr>
<td>36-45</td>
<td>12 (10.1)</td>
<td>03 (2.5)</td>
<td>15 (12.6)</td>
</tr>
<tr>
<td>46-60</td>
<td>08 (6.7)</td>
<td>03 (2.5)</td>
<td>11 (9.2)</td>
</tr>
<tr>
<td>Total</td>
<td>92 (77.3)</td>
<td>27 (22.7)</td>
<td>119 (100)</td>
</tr>
</tbody>
</table>

**Table 2:** Clinical presentations of dengue fever among seropositive cases (n=119)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Symptoms</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Fever</td>
<td>118 (99.2%)</td>
</tr>
<tr>
<td>02</td>
<td>Headache</td>
<td>76 (63.8%)</td>
</tr>
<tr>
<td>03</td>
<td>Abdominal pain</td>
<td>76 (63.8%)</td>
</tr>
<tr>
<td>04</td>
<td>Myalgia</td>
<td>52 (43.7%)</td>
</tr>
<tr>
<td>05</td>
<td>Vomiting</td>
<td>44 (37%)</td>
</tr>
<tr>
<td>06</td>
<td>Ascites</td>
<td>40 (33.6%)</td>
</tr>
<tr>
<td>07</td>
<td>Joint pain</td>
<td>36 (30.2%)</td>
</tr>
<tr>
<td>08</td>
<td>Body itching</td>
<td>28 (23.5)</td>
</tr>
<tr>
<td>09</td>
<td>Back pain</td>
<td>26 (21.8%)</td>
</tr>
<tr>
<td>10</td>
<td>Chest pain</td>
<td>22 (18.5%)</td>
</tr>
<tr>
<td>11</td>
<td>Retro orbital pain</td>
<td>21 (17.6%)</td>
</tr>
<tr>
<td>12</td>
<td>Dyspnea</td>
<td>18 (15.1%)</td>
</tr>
<tr>
<td>13</td>
<td>Pleural effusion</td>
<td>12 (10%)</td>
</tr>
<tr>
<td>14</td>
<td>Diarrhea</td>
<td>08 (6.7%)</td>
</tr>
<tr>
<td>15</td>
<td>Hepatomegaly</td>
<td>04 (3.3%)</td>
</tr>
</tbody>
</table>
actually may actually indirectly affect economic and GDP loss in the country. Many national and international studies do support our findings of the age range of 15 to 45 years. [8,15]

Dengue biomarkers that have been targeted for diagnosis, include viral products (detection of the secreted NS1 protein), and/or the host immune response to virus infection virus specific antibody IgM/IgG. [16] In developing countries the diagnosis of dengue fever mainly based on serodiagnosis NS1 and IgM ELISA. In present study total 119 dengue cases detected either by NS1 and/or IgM ELISA. Out of these 84% cases were detected by NS1 ELISA and 25.2% cases by IgM ELISA method. To maintain the precision in diagnosis and to achieve maximum cases, all samples were processed same day of sample receipt and tested for NS1 antigen and IgM antibody. The NS1 had higher sensitivity in present study. The higher sensitivity of NS1 assays is also supported by many other studies. [17,18]

The clinical spectrum of dengue revealed that fever was present in 99.2% of cases, and it was the principal presentation. Similar findings were reported by several other studies from India which substantiates fever as being the most common presenting symptom in dengue patients. [19,20]

In the present study the second most common symptoms after fever, were headache, abdominal pain and myalgia (Table 2). A recent Indian study by Thaher et al., [21] reported myalgia, abdominal pain and headache as second most common symptoms after fever. A high number cases in our study had vomiting (37%), which might be due to liver injury by viral products and deranged liver functions due altered enzyme levels. In a study by Kumar et al., [8] abdominal pain was found in 37% and vomiting in 47% cases, while according to Arunagirinathan et al., [22] abdominal pain and vomiting were observed in 61% cases. Another Indian study by Kale et al., [11] 64% cases had vomiting as main presentation. These studies support our findings that report abdominal pain and vomiting as predominant symptoms after fever, in dengue patients. It may be interpreted here that although, fever and other gastrointestinal symptoms may be caused by other infections such as typhoid, leptospirosis, entervoiral infections which are common in India but cases of fever with vomiting should be undergo testing for dengue and be kept as one of the differential diagnosis, especially in seronegative cases for dengue. [8,23] In the present study we observed joint pain in 30.2% cases, pruritus in 23.5% and retro orbital pain in 17.6% cases. A study by Laul et. al., [24] reports pruritus in 19% of case which slightly lower than our findings.

The present study thus concludes that 89 (74.8%) cases had DF, 26 (21.8%) DHF and 4 (3.4%) DSS and these findings are nearly similar to study by Parmar et al., [25] which reported DF in 80%, DHF in 16%, and DSS in 4% patients. In another study by Daniel et al., [26] DHF/DSS rate was 33% and Karoli et al., [12] found, DF rate as 70% and DHF 30%. The finding of present study were similar to above mentioned studies. The common hemorrhagic manifestations observed, include body rashes 100% and 80% melena (Table 3). The most common bleeding manifestations observed were petechial rashes and other symptoms (epistaxis, gum bleeding, hematemesis, melena, hypermenorrhea, hemoglobinuria) which helped in identifying early suspected cases of dengue hemorrhagic fever. [7]

CONCLUSION
Our study concludes, that apart from usual manifestations, sometimes unusual but clinically extremely important manifestations can occur which, if not detected early, can prove fatal. So, a vigilant and timely approach is warranted with all clinical parameters. Epidemics occurs post monsoon season thus requiring extensive preventive measures clinical diagnosis and vector control.
ACKNOWLEDGEMENT
We are thankful to Mrs. Suchitra Nirjhar and Miss Monika Singh for her technical support and the Department of Health Research (DHR), Ministry of Health & Family Welfare and ICMR for financial support under establishment of a Network of Laboratories for Managing Epidemics and Natural Calamities (Viral Research and Diagnostic Laboratory).

REFERENCES


*****
Pathophysiology of Dyslipidemia in Modern Medicine and Its Correlation in Unani Literature

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ABSTRACT

Dyslipidemia is defined as a disorder of lipoprotein metabolism, which includes the deficiency or overproduction of lipoproteins or can be a combination of both. The manifestation of the disorder can be seen as an elevation of plasma cholesterol or triglycerides or both or a low HDL level and sometimes a combination of all three together contributing to the development of atherosclerosis. The Pathophysiology includes any defect in the lipid metabolism either in the form of overproduction of a lipoprotein or a decrease in its catabolism. Following possible mechanism may contribute to the causation of the disease which are summarized below:

- **LDL clearance defect**: Deficiency or reduction of apo B-100/E receptors leads to defective hepatic clearance of VLDL remnants (IDL), and then more IDL is converted into LDL. Also clearance of LDL is reduced resulting in increased in LDL concentrations.

- **Defect in Lipolysis**: There are two factors responsible for defective lipolysis:
  i. A reduction in the availability of Lipoprotein Lipase (LPL), such patients have marked elevation of TG-rich lipoproteins especially Chylomicrons.
  ii. There could be abnormality in the lipoprotein themselves. Marked triglyceridemia could be seen in patients having defect in the composition of apoprotein of triglycerides rich lipoprotein, which is best illustrated by the patients who have a congenital absence of apo C-II.

- **Remnant removal defects**: Apo E plays a crucial role in the removal of HDL level and sometimes a combination of all three together contributing to development of atherosclerosis. [1,2]

INTRODUCTION

Dyslipidemia is defined as a disorder of lipoprotein metabolism, which includes the deficiency or overproduction of lipoproteins or can be a combination of both. The manifestation of the disorder can be seen as an elevation of plasma cholesterol or triglycerides or both or a low HDL level and sometimes a combination of all three together contributing to the development of atherosclerosis. [1,2]
remnants of Triglyceride rich lipoprotein. The chylomicrons receptors recognize Apo E, whether they are present on chylomicron remnant or on large LDL. Apo E also appears to promote removal of smaller VLDL remnants via LDL receptor. Every person inherits two genes for apo E and there are around six genotypes. People with E-2/2 genotype tend to accumulate remnants leading to the diseased condition.

- **Overproduction of lipoproteins**: Overproduction of lipoproteins particularly VLDL is the causation of many types of dyslipidemia. Increased production of VLDL can be primary or secondary. The possible reason for primary type could be excessive synthesis of apo B without a concomitant overproduction of VLDL-TG leading to increased secretion of VLDL. For secondary causes, diet rich in carbohydrates can stimulate synthesis of VLDL-TG.

Overproduction of VLDL also leads to conversion of VLDL to LDL. The over production of VLDL-apo B when associated with excessive synthesis of VLDL-TG, it results in the production of endogenous hyperlipidemia.

When hypersecretion of VLDL is combined with apo E 2/2 genotype, there is a marked increase in LDL remnants or beta VLDL explaining how a catabolic defect can accentuate hyperlipidemia in a patient with overproduction of VLDL.

Hyperalphalipoproteinemia is usually the result of a mild defect in clearance of LDL linked with the production of VLDL.

Familial combined hyperlipidemia is explained by combination of VLDL and one or more catabolic defects defining lipoprotein phenotypes which can occurs in different family members at different times.

**PATHOPHYSIOLOGY IN UNANI SYSTEM OF MEDICINE:** In Unani literature, no disease with the name of dyslipidemia could be found, but going through the treatise one could get familiar with a disease Siman-e-mufrat which actually corresponds to dyslipidemia in many ways. Various eminent scholars have given detailed account of the disease and also, they were aware with the concept of Dasoomat-fid-dam (presence of fats/Shaham in the blood) which is congruent to lipids in present era.

Regarding Pathophysiology in Unani literature, the concept of dasoomat-fid-dam and Siman-e-mufrat has been already discussed. With the liability of all of them in the disease, here is a pathological correlation being made with the diseased process of dyslipidemia.

According to Ibn Nafees, Dasoomat is of two types: Lateef type (Lighter one); which produces Tabai hararat (energy) into Lahmi Aza (Muscular organs) and Kaseef type (Heavier one); which penetrates into Barid Aza (cold organs) or Agshiya (membranes) and here they are deposited after getting solidified into shaham. The reason by which dasoomat gets solidify is excessive Buroodat, therefore Barid Ratab (Cold and Wet) person has more accumulation of fat in the body.

In normal being, the vessels remain dilated and there is a proper and constant supply of nutrition to various parts of the body. But excessive fat in the body leads to the narrowing of the blood vessels, which in turn are not able to fulfill the demands of Rooh-e-Haiwani and thus causes diminution of Hararat-e-ghareezia. There is also a risk of rupture to the blood vessels due to narrowing and compression.

**CONCLUSION**

Thus it can be summarized from the above discussion that morbid matter (shaham) when gets accumulated leads to narrowing and hardness of blood vessels, hence blood flow is hampered, there will be disturbance in flow and penetration of Rooh into the organs. When Rooh is inadequate, the supply of blood to various organs is hindered especially when Heart and Brain are affected, there are chances of syncope or stroke or sometimes death may also occurs.
These changes can be co-related with pathological changes arising due to atherosclerosis, for which dyslipidemia plays a contributing role in its development.

REFERENCES

Analysis of the Causes and Prevalence of Sexual Harassment among Undergraduates in Ekiti State University

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Corresponding Author: Adigun K. A

ABSTRACT

Sexual harassment is universally believed to be an offensive act targeting at violating fundamental human right of man or woman with an unconsented sexual motive. This study was carried out to investigate sexual harassment among Ekiti State University students. A structured questionnaire was administered across each Faculty, different forms of sexual harassment was identified as follows; rape, offer sex for grade and unwanted physical contact. The results of the study show that 53(26.5%) respondents picked rape a major cause, offer sex for grade has a total number of 75(37.5%) and unwanted physical contact has total number of 72 (36.0%). It occurred more often between lecturers and students compared to the occurrence among the students themselves. Also, findings show that Provocative dressing and Students’ laziness are among the significant factors. Recommendations were drawn towards curbing the menace.

Keywords: Gender, Higher Institution, Sexual Harassment, Rape

INTRODUCTION

Sexual harassment is a serious problem for students in tertiary institutions. It is different from flirting or other types of behavior that one usually consents to. It could be request for sexual favour or unwelcome sexual behaviour that happens often enough to make one feel uncomfortable, afraid or confused which may even interfere with schoolwork or reduce ability to get along with other colleagues or attend classes. Among its exhibitions are cases of raping, unwanted contacts with interior move or threatening demand for sex. Somehow, the issue of sexual harassment has been addressed in the realm of violence against women. Violence against women is a universal, historical and common phenomenon. Studies conducted across the globe have revealed that violence against women is the most common and widely spread problem faced by women and girl in all culture. Thus, it transcends income, class, race and ethnicity. Such violence relegates millions of women and girls to the margin of society where their rights and safety are denied.

Sexual harassment is the most common form of sexual victimization and it is a cankerworm that has eaten deep into the fabric of the society. The menace of sexual harassment has become widespread in recent years. It has also assumed different natures from place to place particularly in Nigeria. Studies show that it is more prevalent between lecturer and student than student to student (Taiwo, 2014). Sexual harassment is any non-consensual sexual contact or sexual threat. Sexual contact includes (but is not limited to) unwelcome sexual behavior like kissing, and/or intentional touching of another person’s sexually sensitive parts (breasts, buttocks, genital area, groin or inner thigh, or the clothing covering these areas), and any other unwelcome sexual behavior. Some number of factors that may account for girls being sexually harassed by their male lecturers. These include lust, pursuit of happiness, lack of norm of morality, lack of conscience, pursuit of pleasure, lack of temperance, passion, habit, value, personality disorder, inferiority complex,
immaturity, cheapness, abuse of power, and suffering from demonology.

Most sexual harassment in higher institution revolve around a combination of factors: individuals who are predisposed to reacting physically when confronted with the need to discipline oneself, environmental circumstances within their school system, social isolation and neglect among students, lack of support from other students and lack of social and economic power. Emotional immaturity is considered to be the greatest cause of destructive behavior. The students are unable to cope, because of immaturity, situations and stress that occur generally throughout society. The males are more demonstrative. A male student may use the advantage of being more intelligent than his female course-mate to make sexual advances to her before helping her out of an academic problem. More so, use of campus gang and secret cults has been known to serve as instruments of sexual harassment of students in tertiary institutions.

However, it will be naive for anybody to believe that it is only males who harass females. Accusing fingers pointing at males do not exonerate the females from this societal menace. The only reason why it may not be easily discerned that a female is actually harassing a male is that females are more subtle in their approach. Females also harass men by their indecent way of dressing. Some female students sexually harass their male lecturers. They do not attend lectures, preferring to consult with the lecturers privately. They know the power they possess and they exploit this to the fullest. They flaunt themselves and taunt the lecturers into sacrificing their conscience and integrity on the altar of immorality. It may sound absurd that females can sexually harass fellow females, but it does happen. Hardly could a day passes in Nigeria today without stories and reports of sexual harassment in tertiary institutions in Nigerian newspapers. It is in line with these observations that we aim at investigating the extent of sexual harassment experienced by students of tertiary institutions. Sexual harassment as a phenomenon affecting the wellbeing of members of an organization came to be recognized in the 1970s. While it was mainly associated with situations in a traditional workplace, incidents constituting sexual harassment in structures that feature more mixed organizational relationships also came to be highlighted. One such structure is the educational institutions. Sexual harassment in a university setting worldwide is quite pervasive.

Fundamentally, there is no single cause of sexual harassment or a particular theoretical framework that best explains it. However, there some widely accepted theories or models of sexual harassment that tried to explain the phenomenon from different angles and perspectives. These theories are the organizational theory (Gruber, 1992), and natural-biology theory. Organizational theory (Gruber, 1992) explained sexual harassment through organizational-related issues such as power and status inequalities within the organization. According to this theory, power and statuses inequalities that characterized organizational settings increase the probability of the occurrence of sexual harassment. Just like a case of student to lecturer. As indicated, the key issue in the problem of sexual harassment is power. Exercise of power is expected and accepted in a hierarchical society. Western societies are structured hierarchically. This type of structure or orientation renders some individuals powerful and makes the less powerful subordinate to their authority. Unfortunately, in this type of structure, men are favored more than women because of the stereotypical belief that men are goal-oriented, powerful and aggressive, whereas women are passive-receptive and family-oriented (Eagly and Mladinic, 1989; Eagly and Wood, 1982). In this context, it could be said that sexual harassment is the consequence of organizational hierarchical structure that allots unequal power to people within the system. Organizational theory
also identified other factors that facilitate sexually abusive behavior within a hierarchical system. The above studies indicate that sexual harassment is prevailing in higher institutions across geographical regions, culture, and ethnicity. Sexual harassment is significantly impacting students' social, psychological, emotional, and academic lives as they struggle with the mental and physical frustration associated with such experiences. The manifestations of these unwelcomed sexual behaviors take different forms or shapes and the manner in which students perceive and respond to incidents depend chiefly on their gender, culture and level of education Dietz-Uhler et al. (1992). Comparing Nigerian experience with that of other countries, the difference is mostly on the availability of policy initiatives that address sexual harassment.

Natural-biological theory (Barak et al., 1995) argued that sexual harassment is an extension of mate selection evolutionary theory. In other words, sexual harassment is an expression of sexual attraction, a natural element in mate seeking. Naturally, men have a more powerful inner drive to be sexually aggressive and urge to look for mates than women.

Sexual harassment has posed a tremendous challenge to African women both in the workplace and educational setting, and this problem has affected their efficiency and effectiveness in their various academic fields (Haruna, 2016). It has been a challenge in all levels of education and across all academic fields in Africa, impeding their academic performances and social and psychology implications. The awareness of the impact of sexual harassment on female student’s existence has led to multiple approaches in the definition of sexual harassment across culture, ethnicity, race, and settings. The problem of sexual harassment in the continent of Africa has received cold reactions from government and school authorities. Therefore, this study aims at examining prevalence of sexual harassment experience, assumed causes and the gender dynamism among students and lecturers, students to students.

METHODS

Source and Data Collection

Primary data was used. The data was collected via questionnaire and the information required from the questionnaire was therefore presented to the consented respondents by administering the questionnaires by some trained interviewers. The questionnaire has two sections (A and B). Section A was for collection of information on personal data of respondents while Section B consisted of questions that elicited responses from the respondents on sexual harassment expressions with response options: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).

The statistical methods applied include Descriptive statistics, Chi-square test and T-test

Chi-Square Test

A Chi Square test, also written as $\chi^2$ is any statistical hypothesis test wherein the sampling distribution of the test statistic is a Chi-Squared distribution when the null hypothesis is true. Without other qualification, Chi-Square test often used as short for Pearson’s Chi-Squared Test. The Chi-Square test is used to determine whether there is a significant difference between the expected frequencies in two or more categories.

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Where O = observed value and E= expected value.

Independent samples t-test

The independent-samples t-test evaluates the difference between the means of two independent or unrelated groups. That is, we evaluate whether the means for two independent groups are significantly different from each other. The independent-samples t-test is commonly referred to as a between-groups design, and can also be
used to analyze a control and experimental group. With an independent-samples t test, each case must have scores on two variables, the grouping (independent) variable and the test (dependent) variable. The grouping variable divides cases into two mutually exclusive groups or categories, such as boys or girls for the grouping variable gender, while the test variable describes each case on some quantitative dimension such as test performance. Under this contest, the options are graded and scored with: SA=4, A=3, DA=2, SD=1 and U=0.

\[t = \frac{\bar{X}_1 - \bar{X}_2}{S_e}\]

\[S_e = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2} \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}\]

Where \(n_1\) and \(n_2\) are sample sizes and \(s\) the standard deviation.

Assumptions Underlying the Independent-Samples T Test
- The data (scores) are independent of each other (that is, scores of one participant are not systematically related to scores of the other participants). This is commonly referred to as the assumption of independence.
- The test (dependent) variable is normally distributed within each of the two populations (as defined by the grouping variable). This is commonly referred to as the assumption of normality.
- The variances of the test (dependent) variable in the two populations are equal.

RESULTS

Table 1: Age distribution of the respondents

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>48</td>
</tr>
<tr>
<td>20-25</td>
<td>124</td>
</tr>
<tr>
<td>26-above</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
</tr>
</tbody>
</table>

Table 1 above shows that 48(24.0%) of the respondents are within age 15-19 years, 124(62.0%) are within age 20-25 years and 28(14.0%) are of the age 26-above.

Table 2: Respondent distribution by academic levels

<table>
<thead>
<tr>
<th>Academic Level</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>100L</td>
<td>57</td>
<td>28.5</td>
</tr>
<tr>
<td>200L</td>
<td>81</td>
<td>40.5</td>
</tr>
<tr>
<td>300L</td>
<td>28</td>
<td>14.0</td>
</tr>
<tr>
<td>400L</td>
<td>32</td>
<td>16.0</td>
</tr>
<tr>
<td>Spill over</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100.0</td>
</tr>
</tbody>
</table>

As displayed in table 2, it shows the proportion of students in each academic level. Obviously majority are in class two or below while two of the participants ought to have graduated but still remain on campus due to deficiency in one course or the other.

Table 3: Categories of Sexual harassment

<table>
<thead>
<tr>
<th>Form</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rape</td>
<td>53</td>
<td>26.5</td>
</tr>
<tr>
<td>Unwanted physical contact</td>
<td>72</td>
<td>36.0</td>
</tr>
<tr>
<td>Offer sex for grade</td>
<td>75</td>
<td>37.5</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 3: it is shown that ‘offer sex for mark’ is the most prevalent (37.5%) among the settings followed closely (36%) by ‘unwanted physical contact’ and 53(26.5%) consider rape as a form of sexual harassment.

Table 4: Provocative dressing as a factor that influences sexual harassment

<table>
<thead>
<tr>
<th></th>
<th>Observed N</th>
<th>Expected N</th>
<th>(\chi^2)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>114</td>
<td>40.0</td>
<td>179.8</td>
<td>.000</td>
</tr>
<tr>
<td>Agree</td>
<td>77</td>
<td>40.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undecided</td>
<td>8</td>
<td>40.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>0</td>
<td>40.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>1</td>
<td>40.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We observed from the table4 above that 114(57%) of the respondents strongly agreed that provocative dressing is a perceived cause of sexual harassment while 77 agreed but 8 respondents disagreed with this notion and a respondent strongly disagreed. In comparing the p-value of the population parameter and the usual p-value (0.05), the p-value of the study is 0.000 <0.05, thus we reject the null hypothesis and conclude that Provocative dressing is one of the factors that influence sexual harassment in tertiary institutions.
We observed from the table above that 76 (38%) respondents strongly agreed that laziness in studying is a perceived cause of sexual harassment, 99 (49.5%) of the respondents agreed that laziness in studying is a perceived cause of sexual harassment while 12 of the respondent disagreed. In comparing the p-value of the population parameter and the usual p-value (0.05), the p value of the study is (0.000) and is less than 0.05, thus we reject the null hypothesis and conclude that laziness of students in studying is one of the factors that influence sexual harassment in tertiary institution.

We observed from the table above that 78 of the respondent strongly agree, 81 of the respondent agree, 23 of the respondent are yet to decide, 13 of the respondent strongly disagree, and 5 of the respondent disagree that sexual lust from male and female lecturer is a perceived cause of sexual harassment. In comparing the p value of the population parameter and the usual p value (0.05), the p value of the study is (0.000) and is less than 0.05, thus we reject the null hypothesis and conclude that laziness of students in studying is one of the factors that influence sexual harassment in tertiary institutions.

We observed from the table above that 52 of the respondents strongly agreed that poor system for redress is the cause of sexual harassment, 74 agreed, 42 could not decide, 10 of the respondents strongly disagree while 22 disagree that poor system for redress is a perceived cause of sexual harassment. Similarly, 71 (35.5%) of the respondents strongly agreed that partying is the major cause of sexual harassment, 78 respondents agreed, 19 of the respondents couldn’t decide while 9 of the respondents strongly disagreed and 23 of the respondent disagree that partying is a perceived cause of sexual harassment. In both, there are strong association since p-value <0.05.

From the table above, we observed that 65 of the respondent strongly agree, 64 of the respondent agree, 38 of the respondent are yet to decide, 20 of the respondent strongly disagree and 13 of the respondent disagree stress that stress and emotions are one of the perceived causes of sexual harassment in tertiary institutions. In comparing the p value of the population parameter and the usual p value (0.05), the p value of the study is (0.000) and is less than 0.05, thus we reject the null hypothesis and
conclude that Stress and disturbed emotions are one of the perceived cause to which

students are sexually harassment.

### Table 9: T-test for determining gender difference in the prevalence of sexual harassment

<table>
<thead>
<tr>
<th>Sex</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>83</td>
<td>2.14</td>
<td>.767</td>
<td>0.518</td>
<td>0.605</td>
</tr>
<tr>
<td>Female</td>
<td>117</td>
<td>2.09</td>
<td>.816</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test statistics: the t test statistic is .518

Since the P-value = 0.605 > 0.05, then we accept the null hypothesis there is no statistical significant gender difference in sexual harassment among tertiary institutions students in Ekiti State

### Table 10: Sexual harassment experienced from student to student and lecturer to students

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>t</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student to student</td>
<td>1.46</td>
<td>200</td>
<td>.686</td>
<td>-7.616</td>
<td>0.000</td>
</tr>
<tr>
<td>Lecturer to student</td>
<td>2.18</td>
<td>200</td>
<td>1.082</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test statistics: the t test statistic is -7.616 and the p-value is <0.05. This implies the students agreed it is more rampant between lecturers to student than between student to student.

**CONCLUSION AND RECOMMENDATION**

This study was carried out to investigate sexual harassment among undergraduate students of Ekiti State University. Our findings reveal that Rape accounts for 26.5% of harassment while offer sex for grade has a total number of 75(37.5%) and unwanted physical contact accounts for 36.0%. Therefore, offering of sex for grade leads to the highest number of sexual harassment. Research hypotheses were raised to verify factors and reasons for sexual harassment among undergraduates within the study population. A point prevalence of sexual harassment were examined and the result shows that Provocative dressing is a significant factor that influences sexual harassment among undergraduate students and also a perceived cause of sexual harassment in tertiary institutions. Students’ laziness is also a predetermined factor that influences sexual harassment. Also, sexual lust from lecturer towards the students is one of the factors that cause sexual harassment in tertiary institutions. More so, poor system for redress and partying is one of the causes to which students are sexually harassed. Stress and disturbed emotions are one of the perceived causes to which students are sexually harassed. However, there is no difference in agreement by students with some of the causes between both genders but it was deduced that harassment is more prevalent between lecturer and student than the students themselves.

Based on the findings as seeing in the results, one can conclude that provocative dressing, student’s laziness, sexual lust from male and female to students, poor system for redress and partying, stress and disturbed emotions are factors influencing sexual harassment among undergraduates. The participants’ choice of response in the work might not be far from the truth since they were not coerced and their actions might be influenced by their personal experience. Moreover, most of the tested factors were significant which imply the questions are very suitable and relevant. Though, more factors are needed to be tested.

Based on the outcome of the study, we would like to make the following recommendations:

- School authority should make it a point of duty to orientate fresh students for them to know how to avoid the menace of sexual harassment.
- Social and religious bodies on campus should also teach their members institutional moral value.
- Nigerian government, through the legislative arm should promulgate laws
that attach stringent punishment for offenders of any act of sexual harassment.

- A reliable mechanism should be put in place in all higher institutions for students to report such cases without any intimidation and indecent dressing should be strictly rejected in all spheres of life.

REFERENCES


******
Movement versus Myofascial Release Therapy on Pain and Grip Strength in Patients with Lateral Epicondylitis

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ABSTRACT

Background and objectives: Lateral epicondylitis (LE) or tennis elbow is one of the most common lesions of the arm. Current physical therapy management for lateral epicondylitis is aiming to reduce pain and improve grip strength.

Aims and objectives: The purpose of the study was to find out effectiveness of Mulligan ability in subjects with lateral epicondylitis

Methods: 20 subjects of lateral epicondylitis were selected for the study and randomly divided into two groups of 10 subjects each. Group A received mulligan mobilization with movement and Group B received myofascial release therapy. Both the groups were followed by ultrasound therapy. Pain was measured by visual analogue scale and grip strength was measured by simple hand dynamometer. The present study concludes that the patients those who received mulligan mobilization with movement and myofascial release therapy, their pain was reduced and grip strength was improved and was measured by visual analogue scale and simple hand dynamometer.

Keywords – Pain, MFR, Lateral Epicondylitis, hand grip, ultrasound, Visual Analogue Scale

INTRODUCTION

Lateral epicondylitis commonly referred to as lateral elbow Tendinopathy or Tennis elbow is one of the most common lesions of the arm. Lateral epicondylitis is a form of repetitive strain injury resulting in pain at the lateral aspect of the elbow, especially in gripping activities and when resistance is applied to the extensor muscles of the forearm.¹

Lateral epicondylitis is a degenerative or failed healing tendon response characterised by the increased presence of fibroblasts, vascular hyperplasia, and disorganised collagen in the origin of the extensor carpi radialis brevis (ECRB), the most commonly affected structure.²

It is very common in individuals whose jobs necessitate frequent rotatory motion of the forearm (e.g –tennis elbow, carpenters). It is commonly due to more quick, monotonous, cyclic eccentric contractions and wrist gripping activities. The average period of an episode of lateral epicondylitis ranges between 6 months and 2 years. The peak incidence is between 40 and 50 years age.³ Men and women are equally affected.

Repeated movement creates microtrauma which may occur due to overuse or abnormal joint biomechanics, leading to overload of the repairing tissues, this mechanically distort scar tissue and thus stimulate free nerve endings to evoke mechanical nociceptive pain.⁴

The grip strength is affected due to voluntary decline of effort to avoid pain and due to wasting of affecting muscles seen in long standing conditions. The symptoms exacerbate with stressful activities in overuse syndromes but pain may persist even at rest as the condition progress.

Mobilization with Movement (MWM) is a modern technique developed by Mulligan for treating lateral epicondylitis. MWM is a form of manual therapy that includes sustained lateral glide
to the elbow joint with concurrent physiological movement. This mobilization technique is often used to correct the faulty position of the elbow joint and is being widely used in management of musculoskeletal disorders. MWM treatment technique are proposed to restore normal tracking of the radius on the capitulum so that strengthening of forearm muscles can be done without painful symptoms which leads to pain free grip strength.\(^5\)

Myofascial release therapy is one of the most common techniques which are used by physical therapist in managing the symptoms in lateral epicondylitis.\(^6\)

MFR is applied with low load, long duration stretch on the fascial complex, which intended to restore optimal length, decreases pain and improve function. MFR includes focused release of common extensor tendons and gross release of common extensor tendons.\(^7\)

So the purpose of this study was to compare the effectiveness of Mulligan mobilization with movement versus Myofascial release therapy on pain and grip strength in patients with lateral epicondylitis.

**MATERIAL AND METHODOLOGY**

The study was conducted in Physiotherapy department of MVPS college. Participants were included considering the inclusion and exclusion criteria.

**Inclusion Criteria**
- Both the genders are included.
- Pain with resisted wrist extension.
- Tenderness on palpation over the lateral epicondyle.
- Positive Cozen’s test.
- Positive Mill’s test.

**Exclusion criteria**
- Previous surgery to the elbow region.
- Peripheral nerve entrapment.
- Cervical radiculopathy.
- Neurological or neuromuscular impairments.
- Aversion to manual contact.

Procedure was explained to the participants and participants were then asked to sign the consent form. Assessment of all the included participants was done as per the assessment form. Participants were randomly divided into two groups Group A and Group B. Pre and post 7th interventional day and post 14th interventional day VAS and grip strength was measured. Outcome measures was assessed by using
- Visual analogue scale
- Dynamometer

**Group A- Mulligan mobilization with movement:** Mobilization belt was placed around the patient’s proximal forearm and the distal humerus is stabilized with one hand. Lateral glide was applied to the forearm through belt and sustained for about 5-10s. While the patient performs repeated wrist extension against manual resistance applied by the therapist’s hand. The lateral glide was released after the subject achieves pain free wrist extension. Six repetitions were performed with a 15s rest interval between repetitions and was performed for consecutive days in a week for 2 weeks.\(^8\)

**Group B has received - Myofascial release therapy**
- Patient position was supine. The shoulder was internally rotated, the elbow pronated and flexed to around 15degree. The palm is placed flat on the table. Therapist position was standing to side of table at the level of patients shoulder and facing the ipsilateral hand. Treatment duration was 10 min. The technique is performed for consecutive days in a week for 2 weeks.
- Technique1- Treating from common extensor tendon to the extensor retinaculum of the wrist, the therapist began on the humerus, just proximal to the lateral epicondyle. The therapist used the fingertips to engage the periosteum and carried this contact inferior to the common extensor tendon.
and then down the extensor retinaculum of the wrist.

- Technique 2: Treating through the periosteum of the ulna, the therapist uses the knuckles of the hand to work over the periosteum of the ulna. Patients were trained to do alternating ulnar and radial deviation of the wrist, while periosteum of ulna was engaged.

- Technique 3: Spreading the radius from the ulna, the therapist contacted the head of the ulna with the finger pads of one hand and the dorsal tubercle of radius with the pads of other. The therapist engaged through to the periosteum and put a line of tension in a lateral and distal direction. (9)

Ultrasound Therapy
Both the treatments are followed by pulsed ultrasound for 7 minutes around lateral humeral epicondyle. At a frequency of 1Mhz and a 20% duty cycle will be given with an intensity of 2 W/cm². (9)

RESULT
- As the P value for group A pre and post 7th day treatment VAS was <0.0001 which is statistically significant in relieving pain.
- As the P value for group A pre and post 14th day treatment VAS was <0.0001, group A proved extremely statistically significant in relieving pain.
- As the P value for group B regarding pre and post 7th day treatment dynamometer was not <0.0001, group B proved statistically not significant in improving grip strength.
- As the P value for group B regarding pre and post 14th day treatment dynamometer was <0.0001, group B proved statistically significant in improving grip strength.

Table 1. Shows study of various age groups in the study of 20 subjects

<table>
<thead>
<tr>
<th>AGE GROUP</th>
<th>NO OF PATIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP A AND GROUP B</td>
<td></td>
</tr>
<tr>
<td>19-35</td>
<td>3</td>
</tr>
<tr>
<td>36-50</td>
<td>3</td>
</tr>
<tr>
<td>51-65</td>
<td>4</td>
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</table>

Table No. 02 Comparison of VAS score pre & post 7th interventional day

<table>
<thead>
<tr>
<th>VAS</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-interventional Score</td>
<td>6.05</td>
<td>6.2</td>
</tr>
<tr>
<td>Post-7 day interventional Score</td>
<td>5.25</td>
<td>5.25</td>
</tr>
<tr>
<td>SD</td>
<td>0.9789</td>
<td>1.275</td>
</tr>
<tr>
<td>t value</td>
<td>3.361</td>
<td>3.767</td>
</tr>
<tr>
<td>p value</td>
<td>0.005</td>
<td>0.004</td>
</tr>
<tr>
<td>Results</td>
<td>Significant</td>
<td>Significant</td>
</tr>
</tbody>
</table>

Table No. 03 Comparison of VAS score pre & post-14th interventional day

<table>
<thead>
<tr>
<th>VAS</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-interventional Score</td>
<td>6.05</td>
<td>6.2</td>
</tr>
<tr>
<td>Post-14 day interventional Score</td>
<td>3.45</td>
<td>3.45</td>
</tr>
<tr>
<td>SD</td>
<td>1.499</td>
<td>1.423</td>
</tr>
<tr>
<td>t value</td>
<td>6.390</td>
<td>8.636</td>
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<tr>
<td>p value</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Results</td>
<td>Extremely significant</td>
<td>Extremely Significant</td>
</tr>
</tbody>
</table>

Table No. 04 Comparison of dynamometer score pre & post 7th interventional day

<table>
<thead>
<tr>
<th>DYNAMOMETER</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-interventional Score</td>
<td>9.9</td>
<td>12.1</td>
</tr>
<tr>
<td>Post-7 day interventional Score</td>
<td>10.6</td>
<td>12.7</td>
</tr>
<tr>
<td>SD</td>
<td>5.852</td>
<td>7.514</td>
</tr>
<tr>
<td>t value</td>
<td>2.333</td>
<td>2.711</td>
</tr>
<tr>
<td>p value</td>
<td>0.045</td>
<td>0.024</td>
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<tr>
<td>Results</td>
<td>Not significant</td>
<td>Not significant</td>
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</tbody>
</table>
Table No. 05 Comparison of Dynamometer score pre & post 14th interventional day

<table>
<thead>
<tr>
<th>DYNAMOMETER</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-interventional Score</td>
<td>9.9</td>
<td>12.1</td>
</tr>
<tr>
<td>Post-14 day interventional Score</td>
<td>12.5</td>
<td>14.2</td>
</tr>
<tr>
<td>SD</td>
<td>6.133</td>
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<td>t value</td>
<td>-4.801</td>
<td>-5.547</td>
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<tr>
<td>p value</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Results</td>
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<td>Significant</td>
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</tbody>
</table>

Table No. 06 Comparison of VAS score pre & post-interventional 7th & post interventional 14th day Between Group A and Group B

<table>
<thead>
<tr>
<th>VAS</th>
<th>Pre-interventional Score (MEAN)</th>
<th>Post-7 day interventional Score (MEAN)</th>
<th>Post-14 day interventional Score (MEAN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>6.05</td>
<td>5.25</td>
<td>3.45</td>
</tr>
<tr>
<td>Group B</td>
<td>6.2</td>
<td>5.25</td>
<td>3.45</td>
</tr>
<tr>
<td>SD</td>
<td>0.948</td>
<td>1.275</td>
<td>1.423</td>
</tr>
<tr>
<td>t value</td>
<td>-0.352</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>p value</td>
<td>0.729</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Results</td>
<td>Not significant</td>
<td>Not significant</td>
<td>Not significant</td>
</tr>
</tbody>
</table>

Table No. 07 Comparison of Dynamometer score pre & post-interventional 7th & 14th day between Group A and Group B

<table>
<thead>
<tr>
<th>DYNAMOMETER</th>
<th>Pre-interventional Score (MEAN)</th>
<th>Post-interventional Score (7th Day) (MEAN)</th>
<th>Post-interventional Score (14th DAY) (MEAN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>9.9</td>
<td>10.6</td>
<td>12.5</td>
</tr>
<tr>
<td>Group B</td>
<td>12.1</td>
<td>12.7</td>
<td>14.2</td>
</tr>
<tr>
<td>SD</td>
<td>7.076</td>
<td>7.514</td>
<td>7.857</td>
</tr>
<tr>
<td>p value</td>
<td>0.558</td>
<td>0.487</td>
<td>0.596</td>
</tr>
<tr>
<td>Results</td>
<td>Not significant</td>
<td>Not significant</td>
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</tr>
</tbody>
</table>

**DISCUSSION**

The purpose of the study was to compare the effects of Mulligan mobilization with movement and myofascial release therapy on reducing pain and improving grip strength in patients with lateral epicondylitis.

A comparative study of 20 subjects was carried out. Outcome measures were assessed using visual analogue scale for pain and dynamometer for grip strength. Group A received Mulligan mobilization with movement followed ultrasound and Group B received myofascial release therapy followed ultrasound.

Outcome measures were assessed on day one (pre treatment) and on 7th and 14th day post treatment. Data obtained was analyzed.

In within group comparison it shows statistically significant results. There was reduction in pain and improvement in grip strength. However when between group comparison was done it shows statistically insignificant results. Both Mulligan mobilization with movement and Myofascial release therapy were equally effective in reducing pain and improving grip strength in patients with lateral epicondylitis.

Mulligan mobilization with movement is a modern technique developed by Mulligan for treating lateral epicondylitis. Mulligan mobilization is a form of manual therapy that includes a sustained lateral glide to the elbow joint with concurrent physiological movement. (9)

Miller (2000) described in his case report the use of Mulligan mobilization with movement for lateral epicondylitis resulting in reducing pain, improvement of pain free grip strength, and increased ability to tolerate resisted isometric wrist extension. (10)

Paungmali (2004) showed that MWM produces sensory input sufficient to recruit and activate descending pain inhibitory systems that result in some or all of the pain relieving effects. It produces hypoalgesic effects during and following its application, as well as sympathetic excitatory effect. (4)

Myofascial release therapy is the application of a low load, long duration stretch to the myofascial complex, intended to restore optimal length, decrease pain and improve function. It has been hypothesized...
that fascial restrictions in one part of the body cause undue tension in other parts of the body due to fascial continuity. This may result in stress on any structures that are enveloped, divided or supported by fascia. (7)

Myofascial practitioners believe that by restoring the length and health of restricted connective tissue, pressure can be relieved on pain sensitive structures such as nerves and blood vessels.

The analgesic effect of MFR can also be attributable to the stimulation of afferent pathways and the excitation of afferent A fibers, which can cause segmental pain modulation as well as modulation through the activation of descending pain inhibitory systems. (11)

Plastic, viscoelastic and piezoelectric properties of the connective tissues are regained through application of MFR in lateral epicondylitis.

According to this study, Mulligan mobilization with movement and myofascial release therapy are equally effective in reducing pain and improving grip strength in patients with lateral epicondylitis.

Yang C (2000) Mulligan mobilization with movement technique are proposed to restore normal tracking of the radius on the capitulum so that strengthening of forearm muscles can be done without painful symptoms which leads to pain free grip strength.

In this study, when the mean scores of VAS and dynamometer was analysed within groups, it was found extremely significant in both the groups and has showed reduce in pain and increase in grip strength and improvement in functional activities.

Both the groups were followed by pulsed ultrasound for 7 minutes around humeral lateral epicondyle at a frequency of 1Mhz and 20% duty cycle.

Most commonly used modality in physiotherapy practice is therapeutic ultrasound to treat musculoskeletal conditions related to sports injuries and overuse syndromes, for example tendinopathy like medial epicondylitis and other injuries. Tendon healing is promoted by ultrasound because it stimulates collagen synthesis the tendon cells by stimulating cell migration and proliferation that may benefit tendon healing. (12)

According to Tamilvanam M, Bill Vincenzino, under normative conditions, fascia and connective tissues tend to move with minimal restrictions. However injuries resulting from physical trauma, repetitive strain injury and inflammation are thought to decrease fascial tissue length and elasticity, resulting in fascial restriction. Pain reduction is due to m returning the fascial tissue to its normative length by collagen reorganization. (6, 13, 14)

CONCLUSION
The results of the study concluded that both Mulligan mobilization with movement and Myofascial release therapy are equally effective on reducing pain and improving grip strength in patients with lateral epicondylitis.

REFERENCES
8. Deepak B Anap, Mahendra L ShendeMobilization with movement technique as an adjunct to conventional physiotherapy in treatment of Lateral Epicondylitis.college of physiotherapy, P IMS


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Effectiveness of Planned Teaching Programme on Knowledge And Practice Regarding Self-Administration of Insulin among Patients with Diabetes Mellitus, at Dhanalakshmi Srinivasan Medical College and Hospital, in Siruvachur, Perambalur District

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ABSTRACT

Background: Diabetes is one of the incurable but easily controllable diseases. The prevalence of diabetes is higher in developed countries than in developing countries.

Objectives: To evaluate the effectiveness of PTP on knowledge and practice regarding self-administration of Insulin among patients with diabetes mellitus.

Design: Pre experimental one group pre and post test research design.

Setting: Dhanalakshmi Srinivasan Medical college and Hospital, Siruvachur at Perambalur.

Participants: 40 diabetic mellitus patient fulfilling the inclusion criteria.

Selection Criteria: Diabetes Mellitus patients in the age group of 18-45 years attending Medical OPD at Dhanalakshmi Srinivasan Medical College and Hospital.

Sampling Techniques: Non-Probability purposive sampling techniques was used.

Results: The result shows that Regarding pre test average mean score among the Diabetes Mellitus patients, as 8.52.post test average mean score among Diabetes Mellitus as 15.42. The standard deviation in the pre test were 3.19 and post test were 2.76. Thus the difference, in the level of knowledge was confirmed by the paired ‘t’ value 15.59, which was Significant at (p>0.001). Regarding pre test average mean score among the Diabetes Mellitus patients, as 7.88.post test average mean score among Diabetes Mellitus as 15.63. The standard deviation in the pre test were 2.67 and post test were 2.56. Thus the difference, in the level of knowledge was confirmed by the paired ‘t’ value 23.58, which was Significant at (p>0.001). There was significant association with their demographic variables such as sex, educational status and history of illness at P<0.05 level.

Conclusion: Planned Teaching Program was effective among Diabetes Mellitus patients regarding self administration of Insulin.

Key words: Planned Teaching Program, Diabetes Mellitus, self administration, Insulin

INTRODUCTION

“KICK OUT DIABETES”

Diabetes is a serious, chronic disease that occurs either when the pancreas does not produce enough insulin (a hormone that regulates blood glucose) or when the body cannot effectively use the insulin it produces.

Diet, exercise, weight loss, and a healthy lifestyle remain essential in the initial and ongoing management of type 2 diabetes. The addition of one or more oral Anti Diabetic (OADs) is appropriate when glycemic control can no longer be achieved by the use of the initial non-pharmacological measures. Similarly, insulin should be added when the combined use of OADs and non-pharmacologic measures are no longer able to achieve glycemic control.

Assessment and reinstruction for insulin injection technique is important to improve glycemic control, not only for those with erroneous injection skill, but also for those with apparently proper techniques. Individual planned teaching is one of the effective teaching strategies, which can be used to improve the knowledge and ability
of the diabetic patient on self administration of insulin. Even when insulin is prescribed early in treatment, low doses are often employed due to the fear of hypoglycemia. Appropriate patient education early in treatment can do much to alleviate fears and misconceptions.

Insulin therapy is a complicated technique that cannot be mastered easily by health education once or twice. Even in much practiced patients many faults and misconceptions could creep in. So it is necessary to supervise the existing knowledge and practice level and supplement them with the planned teaching programme.

NEED FOR STUDY

A Nation’s prosperity lies in the health of its citizens. Healthy people make the nation strong and wealthy. The past few decades have revolutionised the life style of human beings in the whole world. However this age of speed and competition has increased the stresses and strains which man is subjected to. Diabetes is a growing threat to global public health and affects all societies regardless of age, sex, ethnicity or race. The countries with largest number of diabetic people will be in India, China and U.S.A by 2030. (IDF)

World Health Organizations (2016) stated that globally, an estimated 422 million adults are living with diabetes mellitus. The global prevalence of diabetes in the year 2000 was 171,000,000 and it is expected and approximated to be raised to 366,000,000 by 2030.

According to international diabetes federation (2019) 425 million people have diabetes in the world and 82 million people in the SEA (South East Asia) Region; by 2045 this will be rise to 151 million. There were over 72,946,400 cases of diabetes in India in 2017.

International Diabetes Federations estimated that India currently represents 49 percent of the world’s diabetes burden, with an estimated 72 million cases in 2017, a figure expected to almost double to 134 million by 2025.

Times of India reports that one among the nine diabetic patients in the world is an Indian. By 2025, it is estimated that every fifth diabetic patient in the world will be an Indian. Diabetes is one of the most economically burdensome chronic diseases of our time.

2010, there were 45.2 million cases of type 2 diabetes mellitus in India. of these, 14.7 million and 30.5 million were found in rural and urban areas, respectively. The major cities of India (New Delhi, Mumbai, Kolkata, Chennai, Bangalore, Hyderabad and Ahmadabad) had an estimated prevalence of 7.3 million type 2 diabetes cases in 2010. It is estimated that by the end of 2020, the total prevalence of type 2 diabetes will increase to 69.7 million.

A survey conducted in Chennai, found out that urban areas in India had a significantly higher incidence of diabetes. The incidence in the hospital series varies; 0.7% of admissions in Pondicherry, 11.3% in Madras, 20.3% in Luck now, 9.4% in Delhi, 2.6% in Bombay, 2.2% Hubli, 4.12% in Hyderabad, 1.7% in Jabalpur and 8.7% in Trivandrum. These figures show that diabetes mellitus is more prevalent in affluent societies than in rural areas of south of India. Recent epidemiological studies have reported that migrant Asian Indians living in different parts of the world show a much higher prevalence of diabetes than the host population of those countries.

Alnamas.,et.,al.,(2017) assessed the knowledge regarding self administration of insulin injection among diabetes mellitus patients in Diabetic Clinic.20 diabetic mellitus patients on insulin therapy were selected by convenient sampling method. The study revealed that 12 participants (60%) are having good knowledge regarding self administration of Insulin injection. 6 participants (30%) are having average knowledge and 2 participants (10%) are having poor knowledge regarding self administration of Insulin injection. The study concluded that all diabetes mellitus
Shyamala Grace, S et.al. Effectiveness of Planned Teaching Programme on Knowledge And Practice Regarding Self-Administration of Insulin among Patients with Diabetes Mellitus, at Dhanalakshmi Srinivasan Medical College and Hospital, in Siruvachur, Perambalur District

patient should be educated or trained about self administration of Insulin.

Surekha Bhujanga shetty (2017) conducted a cross sectional study to assess the knowledge, attitude and practice amongst subjects with diabetes on insulin therapy in Karnataka. 448 diabetes subjects with insulin therapy were taken as a study sample. Results revealed that 61.38% of them were men and 44.9% of them were in the age group of >60 years. 70.5% of the subjects were self-injecting insulin. 85.4% subjects were rotating the injection sites. The study concluded that due to poor knowledge, attitude and practice makes the diabetic patients to undergo several errors in insulin injection technique, that makes the insulin injection painful, reduces patient compliance and also affect glycemic control. It is recommended by all health care professional need to conduct the pre-injection counseling, frequent reassessment of injection technique, to alleviate these factors for achieving optimal success with insulin therapy.

STATEMENT OF THE PROBLEM
“Effectiveness of Planned Teaching Programme on Knowledge and Practice regarding self-administration of Insulin among Patients With Diabetes Mellitus, At Dhanalakshmi Srinivasan Medical College And Hospital, in Siruvachur, Perambalur District”.

OBJECTIVES
- To assess the level of knowledge and practice regarding self-administration of insulin among patients with diabetes mellitus before and after the PTP.
- To evaluate the effectiveness of PTP on knowledge and practice regarding self-administration of insulin among patients with diabetes mellitus.
- To find out the association between the post-test level of knowledge and practice regarding self administration of insulin among diabetes mellitus with their selected demographic variables.

HYPOTHESES
H1: There is significant difference between the level of knowledge and practice on self administration of insulin among patient with diabetes mellitus before and after PTP.
H2: There is a significant effectiveness of PTP regarding self administration of insulin among patient with diabetes mellitus.
H3: There will be significant association between post test level of knowledge and practice on self- administration of insulin among patient with diabetes mellitus with their selected demographic variables.

DELIMITATIONS
The study is delimited to
- Patients with diabetes mellitus, whose receive insulin.
- Patients attending medical OPD at Dhanalakshmi Srinivasan Medical College and Hospital.
- 40 samples only.
- The study period was 30 days.

MATERIALS AND METHODS
RESEARCH APPROACH: Quantitative evaluative approach
RESEARCH DESIGN: Pre-experimental one-group pre-test post-test.
SETTING OF THE STUHY: Dhanalakshmi Srinivasan Medical College and Hospital Siruvachur, Perambalur.
TARGET POPULATION: Diabetes mellitus patients.

ACCESSIBLE POPULATION:
Diabetes mellitus patient attending OPD at Dhanalakshmi Srinivasan Medical College and Hospital, Siruvachur.
SAMPLE: Diabetes mellitus patients aged 18 to 45 years, who are attending OPD at DSMCH, Siruvachur, who fulfilled the inclusion criteria.
SAMPLE SIZE: The sample size is 40 diabetes mellitus patients.

SAMPLING TECHNIQUES: The sampling techniques used for the study was Non-Probability purposive sampling techniques.
DESCRIPTION OF THE DATA COLLECTION INSTRUMENT

It consists of three sections:

SECTION A: Demographic variables

It consisted of 10 items such as age, sex, education, occupation, income of the family, dietary habits, marital status, family history of Diabetes Mellitus, duration of illness and duration of insulin treatment, who is injecting insulin for you.

SECTION B:

Structured Knowledge questionnaire regarding self-administration of insulin among diabetes mellitus patients. The tool consisted of 20 items to assess the knowledge regarding self-administration of insulin. In that scoring, the correct answer carries 1 score and the wrong answer carries 0 score. The maximum score is 20 and the minimum score is 0.

SECTION C:

Structured observation checklist to assess the ability of the patients in performing the self-administration of insulin. The tool consisted of 3 areas such as:

- Preparation of the articles
- Method of insulin administration
- After-care of the articles.

The observation is marked under two headings, “done” and “not done”. Each item was given one score if it was under the heading done. The total possible score was 21.

SCORING INTERPRETATION

SECTION B: To evaluate the effectiveness of planned teaching programme regarding knowledge on self-administration of insulin among diabetes mellitus patients.

Diabetes mellitus patients respond to 20 Questions. It was allotted Inadequate 0-7, moderate level 8-14, adequate level 15-20

<table>
<thead>
<tr>
<th>LEVEL OF KNOWLEDGE REGARDING SELF ADMINISTRATION OF INSULIN</th>
<th>SCORE</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate</td>
<td>15-20</td>
<td>71-100</td>
</tr>
<tr>
<td>Moderate</td>
<td>8-14</td>
<td>36-70</td>
</tr>
<tr>
<td>Inadequate</td>
<td>0-7</td>
<td>0-35</td>
</tr>
</tbody>
</table>

SECTION C: Observational check list to assess the practicing ability of self-administration of insulin.

The observational check list was graded in 3 level. Poor 0-7, Moderate level 8-14, Good 15-21.

<table>
<thead>
<tr>
<th>LEVEL OF OBSERVATION</th>
<th>SCORING</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>15-21</td>
<td>71-100</td>
</tr>
<tr>
<td>Moderate</td>
<td>8-14</td>
<td>36-70</td>
</tr>
<tr>
<td>Poor</td>
<td>0-7</td>
<td>0-35</td>
</tr>
</tbody>
</table>

RESULTS AND DISCUSSION

TABLE 1: Evaluate The Effectiveness of Planned Teaching Programme regarding the Self administration of Insulin among Diabetes Mellitus.

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Level of Knowledge</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Mean Difference</th>
<th>Student’s ‘t’ Test</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pre test</td>
<td>8.52</td>
<td>3.19</td>
<td>6.90 ± 2.80</td>
<td>t=15.59p=0.001</td>
<td>***</td>
</tr>
<tr>
<td>2</td>
<td>Post test</td>
<td>15.42</td>
<td>2.76</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table shows the Comparison of Mean, SD and paired ‘t’ test value of knowledge scores before and after administration of planned teaching programme regarding self-administration of Insulin among Diabetes Mellitus.

Regarding pre test average mean score among the Diabetes Mellitus patients, as 8.52.post test average mean score among Diabetes Mellitus as 15.42. The standard deviation in the pre test were 3.19 and post test were 2.76. Thus the difference, in the level of knowledge was confirmed by the paired ‘t’ value 15.59, which was Significant (p>0.001).
Shyamala Grace, S et.al. Effectiveness of Planned Teaching Programme on Knowledge And Practice Regarding Self-Administration of Insulin among Patients with Diabetes Mellitus, at Dhanalakshmi Srinivasan Medical College and Hospital, in Siruvachur, Perambalur District

Table 2: Shows the Comparison of Mean, SD and paired ‘t’ test value of practice score before and after planned teaching programme regarding self administration of Insulin among Diabetes Mellitus.

Regarding pre test average mean score among the Diabetes Mellitus patients, as 7.88.post test average mean score among Diabetes Mellitus as 15.63. The standard deviation in the pre test were 2.67 and post test were 2.56. Thus the difference, in the level of knowledge was confirmed by the paired ‘t’ value 23.58, which was Significant (p>0.001).
DISCUSSION
The first objective was to assess the level of knowledge and practice regarding self-care administration of insulin among patients with Diabetes Mellitus before and after the PTP respectively pre-test level of knowledge were 82.5% of them had inadequate, 17.5 had moderate knowledge, in post-test level of knowledge score was 62.5% of them had adequate knowledge, 30% of the sample had moderate knowledge. Pre-test level of practice were respectively 85.5% of them have poor practice regarding self-administration of insulin and post-test level of practice was 72.5% good, 27.5% moderate practice level. Hypothesis H1 is accepted.

The second objective was to evaluate the effectiveness of PTP on knowledge and practice regarding self-administration of insulin among patients with diabetes mellitus. Comparison of Mean, SD and Paired ‘t’ test value in pre test and post test 8.52,3.19 and 15.42, 2.76 respectively. The paired ‘t’ test value t=15.59 at 0.001 level. (Significant).

Hypothesis H2 is accepted.

The third objective of the study was to find out the association between the post-test level of knowledge and practice regarding self administration of insulin among diabetes mellitus with their selected demographic variables.

Chi-Square Value calculated to find out the association between post test level of knowledge regarding self administration of Insulin with their selected demographic variables. The finding reveals that there was Not Significant association with Age, marital status, occupation, monthly income, dietary habits, family history of illness, duration of illness, duration of Insulin, who is injecting Insulin at p<0.05 level. The finding revealed that there was Significant Association with Sex, educational status and family history of illness.

Chi-Square Value calculated to find out the association between post test level of Practice regarding self administration of Insulin with their selected demographic variables. The finding reveals that there was Not Significant association with Age, marital status, occupation, monthly income, dietary habits, duration of illness, duration of Insulin, who is injecting Insulin at P<0.05

Table 3.1-ASSOCIATION BETWEEN POST TEST LEVEL OF PRACTICE REGARDING SELF ADMINISTRATION OF INSULIN AMONG DIABETES MELLITUS PATIENTS WITH THEIR SELECTED DEMOGRAPHIC VARIABLES.

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Demographic variables</th>
<th>Table value</th>
<th>Chi-Square value</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age in years</td>
<td>P=0.31</td>
<td>( \chi^2=3.38 )</td>
<td>Not significant</td>
</tr>
<tr>
<td>2</td>
<td>Sex</td>
<td>P=0.04</td>
<td>( \chi^2=4.40 )</td>
<td>Significant</td>
</tr>
<tr>
<td>3</td>
<td>Marital status</td>
<td>P=0.48</td>
<td>( \chi^2=2.43 )</td>
<td>Not significant</td>
</tr>
<tr>
<td>4</td>
<td>Educational status</td>
<td>P=0.02</td>
<td>( \chi^2=11.43 )</td>
<td>Significant</td>
</tr>
<tr>
<td>5</td>
<td>Occupation</td>
<td>P=0.49</td>
<td>( \chi^2=3.40 )</td>
<td>Not Significant</td>
</tr>
<tr>
<td>6</td>
<td>Monthly income</td>
<td>P=0.04</td>
<td>( \chi^2=0.04 )</td>
<td>Not significant</td>
</tr>
<tr>
<td>7</td>
<td>Dietary habits</td>
<td>P=0.66</td>
<td>( \chi^2=0.18 )</td>
<td>Not significant</td>
</tr>
<tr>
<td>8</td>
<td>Family history of illness</td>
<td>P=0.02</td>
<td>( \chi^2=5.46 )</td>
<td>Significant</td>
</tr>
<tr>
<td>9</td>
<td>Duration of illness</td>
<td>P=0.21</td>
<td>( \chi^2=4.39 )</td>
<td>Not significant</td>
</tr>
<tr>
<td>10</td>
<td>Duration of insulin treatment</td>
<td>P=0.15</td>
<td>( \chi^2=5.23 )</td>
<td>Not significant</td>
</tr>
<tr>
<td>11</td>
<td>Who is injecting insulin to you?</td>
<td>P=0.37</td>
<td>( \chi^2=3.13 )</td>
<td>Not significant</td>
</tr>
</tbody>
</table>
level. The finding revealed that there was significant association with the demographic variables such as sex, educational status, family history of illness at P<0.05 level. Hypothesis H3 is accepted.

**CONCLUSION**

The study shows that planned teaching program was effective in self-administration of insulin among diabetes mellitus patients.

**REFERENCES**

- Juma Ngudo Ahmad. Factors Affecting Implementation of Health Services by Community Health Units. J Comm Pub Health Nurs 2017, 3:3
- Dr. Komal Suresh Gawande et. al.,(2016). Assess the knowledge and practice concerning insulin use in adult patients with Diabetes Mellitus in tertiary care centre. Sep 3(9).


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Comparison of Swiss Ball Exercises versus Conventional Therapy on Improving Trunk Control in Patients with Acute and Subacute Stroke

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Corresponding Author: Dr Shrikrishna G. Shinde

ABSTRACT

Background and objectives: Stroke is the sudden loss of neurological function caused by an interruption of blood flow to the brain. Common problem after stroke are impaired motor functions including balance and gait disturbances. The trunk being central key point of body, proximal trunk control is a pre requisite for distal limb movement control, balance and functional activities. So the purpose of study was to Compare effectiveness of Swiss ball exercises versus conventional therapy on improving trunk control in patients with acute and sub -acute stroke.

Methods: 18 Subjects with acute and sub-acute stroke based on inclusion and exclusion criteria were conveniently allocated to Group A and Group B. Group A patients received Swiss ball exercises and Group B received conventional therapy. Using TIS and PASS pre and post treatment assessment was recorded. The results of the study shows that trunk exercises performed on either Swiss ball or on bed can improve trunk control. But statistically Swiss ball training gives more significant improvement in trunk control than conventional therapy.

Keywords – Trunk control, TIS, PASS, Swiss ball exercises, conventional therapy.

INTRODUCTION

Stroke is the sudden loss of neurological function caused by an interruption of blood flow to the brain. There are two types of stroke: 1. Ischemic stroke: - it results when a clot blocks or impairs blood flows, deprives the brain of essential oxygen and nutrients. It is the most common type, affecting about 80% of individuals with stroke.2. Hemorrhagic stroke: - occurs when blood vessels rupture, causing leakage of blood in or around the brain. (¹) Developing countries like India are facing a double burden of communicable and non-communicable diseases. Stroke is one of the leading causes of death and disability in India. According to World Heart Federation every year 15 million people worldwide suffer from stroke, nearly 6 million die and 5 million left disabled. It is the major health problem in India and is the third leading cause of disability and the second leading cause of death. About 1.2% of death in India is due to stroke, the incidence is 105 per 1 lakh population in urban community and 262 per lakh in rural community. Among the non-communicable diseases stroke contributes for 41% of deaths and 72% of disability as estimated by Indian council of medical research. (²)

Duration of acute stroke according to WHO is 2 week and sub-acute stroke is from 2 week to one year. Hemiparesis refers to weakness of one side of body; weakness includes muscles of upper and lower limb, trunk and face. Common problem after stroke are impaired motor functions including balance and gait disturbances. The trunk being central key point of body, proximal trunk control is a pre requisite for distal limb movement control, balance and functional activities. The sensory and motor impairment of upper and lower limb and trunk interfere with functional performance after stroke many hemiplegic shift their center of gravity to unaffected side when maintaining quite stance and show left right
asymmetry and decreased balance ability.\(^{(3)}\)

In addition to limb and trunk impairments hemiplegic stroke patients frequently present with balance abnormalities and are associated with poor balance and falls. Effective trunk control is the ability of trunk muscles to allow the body to remain upright, adjust weight shifts and perform selective trunk movements against gravity and maintain base of support during static and dynamic postural adjustments in sitting, standing and stepping.\(^{(4)}\)

Trunk control is related to measure of balance, gait and functional activity in patient with stroke. Counter rotation between the upper and lower trunk is the mobility over stability task which is essential for all the functional movements. the rotation of trunk muscle activity is not unilateral, but require static holding of contralateral muscle to stabilize central Aponeurosis, so allowing antagonist shorten and draws one side of pelvis or thorax forwards.\(^{(5)}\)

Trunk training exercises are given to improve their trunk stability and balance. Another method is by giving the Swiss ball exercises, there will be improved proximal trunk control which is prerequisite for distal limb movement and therefore prominent gait changes can be seen. Trunk training exercises are effective to improve sitting balance and effective loading and activation of muscles of paretic leg. Core stability exercises are effective in achieving effective balance in a multi-system and multi-directional task approach.

Swiss ball are commonly used in stroke rehabilitation as it provides greater challenge to control and dynamic balance and there are evidences that Swiss ball training is superior to ground based exercises in their ability to recruit trunk muscles by increasing their demand and trunk balance on athletes. Exercises performed on Swiss ball lead to better trunk muscle activity in patients with stroke. When the exercises are performed on the Swiss ball the trunk musculature gets activated, since the movement of a ball beneath the participants provides a postural perturbation to which muscles respond in order to maintain posture and therefore improves balance.\(^{(4)}\)

**MATERIAL AND METHODOLOGY**

The study was conducted in Physiotherapy department of MVPS college. Participants were included considering the inclusion and exclusion criteria.

**Inclusion Criteria:**
1. Acute and sub-acute stroke patients with age between 40-60 years.
2. Mini mental score should be 24 or above.
3. Patient should be able to understand and follow simple verbal instruction.
4. Berg balance score should be more than 21.

**Exclusion Criteria:**
1. Neurological disease affecting balance other than stroke.
2. Visual problem which would interfere with reaching to pick up objects.
3. Musculoskeletal disorder of trunk or lower extremity affecting motor performance.
4. Cardiovascular conditions like myocardial infarction.

Procedure was explained to the participants and participants were then asked to sign the consent form. Assessment of all the included participants was done as per the assessment form. Participants were randomly divided into two groups Group A and Group B. Group A received trunk exercises on Swiss ball. Group B received conventional therapy. Outcome measures were taken using Trunk Impairment scale and postural assessment scale.

**Group A has received Swiss ball therapy**
1. Active sitting: The subjects were asked to sit on a Swiss ball with erect spine then they were asked to balance themselves keeping their foot flat on the
floor. After that they bounce on the Swiss ball with balance.

2. Rock back and forth: The subject was asked to sit on Swiss ball with erect spine. They were asked to do pelvic tilting slowly to both anterior and posterior with balance.

3. Rock side to side: The subject were asked to sit on Swiss ball with erect spine. They were asked to do pelvic tilting slowly to both sides with balance.

4. Circles: The subject was asked to sit on Swiss ball with erect spine. They were asked to start rolling the hips slowly, both in clockwise and anticlockwise.

5. Upper trunk rotation: was performed by moving each shoulder forwards and backwards.

6. Lower trunk rotation: was performed by placing the both the patient’s legs on Swiss ball and asked to move the ball to both the left and right by rotating the pelvis. Initially ball was placed beneath the knees and the advanced towards the ankles.

7. Seated march: The subject was asked to sit on Swiss ball with erect spine. They were asked to begin slow march lifting, alternately foot off the ground, progressing with comfortable speed with balance.

8. Multidirectional reach outs: forward reach: was performed by asking the patient to reach a fixed point at shoulder height by forward flexing the trunk at the hips.

5. Weight shift :Patient is asked to shift weight

**RESULT**

- As p value < 0.0001 in group A for **TIS**, result is extremely statistically significant i.e. Swiss ball exercises are effective in TIS for improving trunk control in patients with acute and sub-acute stroke.

- As p value < 0.0001 in group A for **PASS**, result is extremely statistically significant i.e. Swiss ball exercises are effective in improving trunk control in patients with acute and sub-acute stroke.

- As p value = 0.0012 in group B for **TIS**, result is very statistically significant i.e. Conventional therapy showed improvement in TIS for improving trunk control in patients with acute and sub-acute stroke.

- As p value = 0.0012 in group B for **PASS**, result is very statistically significant i.e. Conventional therapy showed improvement in PASS for improving trunk control in patients with acute and sub-acute stroke.

**Table No.1: Comparison Of Pre And Post Values Of Tis (Group A):**

<table>
<thead>
<tr>
<th></th>
<th>PRE Rx</th>
<th>POST Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN</td>
<td>13.38</td>
<td>20.13</td>
</tr>
<tr>
<td>S.D</td>
<td>1.19</td>
<td>0.83</td>
</tr>
<tr>
<td>T VALUE</td>
<td>16.38</td>
<td></td>
</tr>
<tr>
<td>P VALUE</td>
<td>&lt;0.0001</td>
<td></td>
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</tbody>
</table>

**Table No.2: Comparison Of Pre And Post Values Of Pass (Group A):**

<table>
<thead>
<tr>
<th></th>
<th>PRE Rx</th>
<th>POST Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN</td>
<td>23.75</td>
<td>31</td>
</tr>
<tr>
<td>S.D</td>
<td>2.82</td>
<td>1.60</td>
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<tr>
<td>T VALUE</td>
<td>13.78</td>
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</tr>
<tr>
<td>P VALUE</td>
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**Table No.3: Comparison Of Pre And Post Values Of Tis (Group B):**

<table>
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<th></th>
<th>PRE Rx</th>
<th>POST Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN</td>
<td>13.63</td>
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</tr>
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<td>S.D</td>
<td>1.41</td>
<td>1.28</td>
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</table>
Shrikrishna G. Shinde et al. Comparison of Swiss Ball Exercises Versus Conventional Therapy on Improving Trunk Control in Patients With Acute and Subacute Stroke

Table No. 4: Comparison Of Pre And Post Values Of Pass (Group B)

<table>
<thead>
<tr>
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<th>PASS</th>
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</tr>
</thead>
<tbody>
<tr>
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</tr>
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<td>S.D.</td>
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<td>2.83</td>
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<tr>
<td>T VALUE</td>
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</tr>
<tr>
<td>P VALUE</td>
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</table>

Table No. 5: Comparing Tis Of Group A And Group B:

<table>
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<tr>
<th></th>
<th>GROUP A</th>
<th>GROUP B</th>
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</thead>
<tbody>
<tr>
<td>MEAN</td>
<td>6.75</td>
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<td>P VALUE</td>
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<td>Significance</td>
<td>Extremely Statistically Significant</td>
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</table>

Table No. 6: Comparing Pass Of Group A And Group B:

<table>
<thead>
<tr>
<th></th>
<th>GROUP A</th>
<th>GROUP B</th>
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<tbody>
<tr>
<td>MEAN</td>
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<td>Significance</td>
<td>Extremely Statistically Significant</td>
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DISCUSSION

The purpose of study was to compare the effect of Swiss ball exercises and conventional therapy on improving trunk control in patients with acute and sub-acute stroke.

In this study 18 patients were conveniently assigned 9 were in group A which received Swiss ball exercises and 9 were group B which received conventional therapy. Two patients were drop out due to some reason. The outcome was measured by using TIS and PASS.

The result of this study revealed that Swiss ball exercises are more effective than conventional therapy on improving trunk control in patients with acute and sub-acute stroke.

Trunk control has been a key factor for balance and it is an early predictor of functional outcome after stroke. Lack of trunk control is attributed to muscle weakness, motor incoordination and multisensory disintegration in subjects affected with stroke.

Gregory J Lehman et al (8) studied about the effect of Swiss ball training in muscle activity. They selected 11 college students of average weight 85.4 kg and height 179 cm and age 27.6 with greater than 6 months of weight training and no back pain. They trained them with Swiss ball and recorded the muscle activity with EMG. They concluded that the Swiss ball exercises influence the trunk muscle activity in rectus abdominus and external oblique.

Study published “efficacy of trunk exercises on Swiss ball versus bed in improving trunk control in hemiparetic patients”. - S. Felix Renald. (3) This study revealed that there was significant improvement in trunk control following trunk exercises on Swiss ball than on bed among hemiparetic patients. The possible reason for better trunk control improvement in Swiss ball group may be as the movement of Swiss ball under the patients provided a postural perturbation to which trunk muscle respond reactively in order to maintain the desired postural stability.

Another study, “effectiveness of trunk training exercises versus Swiss ball exercises for improving sitting balance and gait parameter in acute stroke subjects.” Kothalanka Viswaja et al (4) concluded that both group noted significant differences. But when comparing between these two groups there is no statistical significance noted. So this study concluded that there is no significant difference between trunk training exercises and Swiss ball exercises on sitting balance and gait parameters in subjects with stroke.

Raikan Büyükkavc, Füsun Şahin, (6) the impact of additional trunk balance exercises on balance, functional condition and ambulation in early stroke patients. The study revealed that In early stroke patients either conventional exercises or conventional exercises plus trunk balance exercises can provide significant improvement in balance, functional condition and ambulation. However, the level of the improvement is better for the group which was applied trunk balance exercises to conventional exercises. Trunk balance exercises that are easily applicable with simple mechanisms by the patients themselves can be added to the rehabilitation.

The possible reason for better trunk control improvement in Swiss ball group
may be as the movement of Swiss ball under the patients provided a postural perturbation to which the trunk muscle responds reactively in order to maintain the desired postural stability. Trunk stabilization training on unstable surfaces activated the postural muscle around the abdomen and pelvis, more than that on a stable surfaces. (3)

In biomechanical aspect the weight is shifted in any plane, the trunk respond with a movement to counteract the change in the center of gravity training on Swiss ball as change in the surface stability may influence trunk muscle activity and also influences anticipatory postural adjustment and trunk performance. (4)

Improved weight shifting ability through rotations also can enhance trunk muscle stability and balance. Improved lower trunk control effectively stabilizes the pelvis, which can lead to improved mobility and gait in the Swiss ball group.

The bouncing and rocking movement on Swiss ball increases alertness by connecting the vestibular system with reticular formation. The exercises on Swiss ball restore the function of movement and equilibrium and it encourage the patient’s participation and also makes the use of affected muscle easy. The uneven surface of Swiss ball reduces the chances of repetitive stress on muscles. This could be possible reason for better improvements found in Swiss ball group. (7)

The positive findings in conventional therapy may be because of effective load bearing through effected limb which is carried over to standing up. Trunk stabilization exercises to strengthen the muscles of abdomen help to maintain dynamic stability of the body these exercises using functional movements are important. Core stability exercises improves sitting balance and ability to maintain a static posture after dynamic posture by activation of trunk musculature especially transverse abdominals and multifidus which are deep seated muscles and they help in spinal stabilization, these muscles were trained for 4 weeks and there was improvement in sitting balance which in turn enriched quality of gait. (4)

**CONCLUSION**

The results of the study shows that trunk exercises performed on either Swiss ball or on bed can improve trunk control. But statistically Swiss ball training gives more significant improvement in trunk control than conventional therapy

**REFERENCES**

5. PM Davis. Problems associated with loss of selective trunk activity in hemiplegia 1990:31-65
7. Sidharth Sekhar Patra, May 2010, effectiveness of Swiss ball training over conventional physiotherapy to improve the trunk balance of post stroke patients,