Proceeding of the 1st International Symposium of Public Health

"Emerging and Re-emerging Diseases"

Editors
Sri Sumarmi
Ika Yuni Widyawati
Trias Mahmudiono
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Maya Sari Dewi
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Reviewer Board
Ika Yuni Widyawati
Ratna Dwi Wulandari
Sondang Sidabutar
Dewi Kurniasih

S3 Ilmu Kesehatan
Fakultas Kesehatan Masyarakat
Universitas Airlangga
WELCOME MESSAGE

*Assalamu’alaikum warahmatullahi wabaraqatuh*

I wish you all a warm welcome to Surabaya Indonesia.

It is a great pleasure for me to invite you in the 1st International Symposium of Public Health, held by Faculty of Public Health, Universitas Airlangga. This remarkable event is conducted by Doctorate and undergraduate program of Faculty of Public Health, Universitas Airlangga in collaboration with Airlangga Health Science Institute and Smart FM Surabaya. It’s an honor to present "Emerging and Re-emerging Diseases" focusing on Zika virus as the main theme of our Symposium, as Zika being a new emerging disease in Asia region.

The aim of this symposium is to disseminate the strategic planning of Indonesian Government, particularly the Ministry of Health, to prevent the transmission of Zika virus as well as the global and regional regulation. In relation to this matter, we invite Minister of Health as keynote speaker and also foreign expert: Professor Cordia Chu from Griffith University, Australia, but unfortunately in this opportunity Professor Chu with a great regret can not come physically to Surabaya, due to a combination of critical family and urgent business. Instead, she likes to nominate Mr. Febi Dwirahmadi, SKM, MSc.PH, PhD to share the scientific knowledge about managing and Handling Zika in Community Setting. We also invite Dr. Pang Junxiong Vincent from National University of Singapore, who are going to discuss about the epidemiology of Zika, as well as Professor Nasronudin to present the role of Universitas Airlangga in research development.

The committee also invite the audience to submit abstracts in several sub themes in public health areas. We are expecting of two hundreds (200) participants, with at least ten percent (10%) coming from foreign countries and ninety percent (90%) from local participant coming from various region in Indonesia. There are a hundred and seven (107) abstracts were submitted, and then eighty nine (89) abstracts were accepted. From the accepted abstracts, there are fifty two (52) abstracts were accepted as oral presentation, and thirty seven (37) are presented as poster. This symposium was divided into two sessions, the plenary session and panel oral presentation. It is designed in such way, so that the delegates from various countries or provinces, could share their local experience and best practices and discover ideas for strong regional initiatives.

At last, we would like to acknowledge for all parties which are provide the valuable materials as well as financial support for the successful symposium. As chair of organizing committee, I would also like to say deep thank you for all committees; my colleagues, and also students in faculty of Public Health Universitas Airlangga, who have been working to be part of a solid team and amazing committee.
To all of audience, thank you very much for your participation in this symposium, I hope you enjoy not only the symposium but also the sparkling city of Surabaya.

_Wassalamu’alaikum warahmatullahi wabaraqatuh_

Sincerely,

Chair Person

Dr. Sri Sumarmi, SKM, M.Si
Assalamu'alaikum wa-rahmatullahi wa-barakatuh.

May the peace, mercy and blessings of Allah be upon you.

Alhamdulillah! Praise be to Allah and along with this gratefulness let us also send shalawat and salam to our Prophet Muhammad SAW (Praise Be Upon Him): Allaahumma shalii 'alaa Muhammad wa 'alaa aali Muhammad. May Allah give mercy and blessings upon Him.

Ladies and Gentlemen,

The world always advances along with its challenges including in medical field. There are emerging diseases which have just occurred recently such as the one caused by Zika virus. There are also re-emerging diseases for the ones we assumed have been eradicated but they occurred again such as measles and polio.

Special for diseases related to Zika virus, some countries have declared a state of emergency. WHO even declared Zika virus transmission in South America as international public health emergency. Regarding the matter, for the global Zika virus epidemiology development, we regret to learn that information on Zika virus is limited such as on the risks, diagnosis, and the transmission method of the virus. In short, Zika virus has continued to spread and become a global precedence.

Therefore, this “INTERNATIONAL SYMPOSIUM OF PUBLIC HEALTH” is very welcomed and I appreciated the theme, “Emerging and Re-emerging Disease”. I believe the communities, academic or general public will achieve benefits from the symposium results.

Ladies and Gentlemen,

Through this symposium, we are expected to get explanation and updates on measures to handle the “Emerging and Re-emerging Disease”. The explanation is expected to give new insights for us to improve the quality of life as the demand to better quality of life, free from diseases, is even higher.
UNIVERSITAS AIRLANGGA

Hopefully, this event works as an effort to spread the knowledge and also functions as an input for the policy maker in medical field.

I would like to express my deepest gratitude to all participants, either domestic and from other countries, also to the committee and other parties who support this international symposium. I hope that our active participations can bring success to this seminar and they are regarded as act of kindness.

By saying grace: “Bismillahirrahmanirrahim”, I officially open the “INTERNATIONAL SYMPOSIUM OF PUBLIC HEALTH” on “Emerging and Re-emerging Disease”.

May this symposium be a success, run well and all the objectives achieved. Let us advance together to a better life in all aspects, especially in Public Health.

Have a great symposium and continue success!

Wassalamu’alaikum wa-rahmatullahi wa-barakatuh.

Rector of Universitas Airlangga,

Prof. Dr. Moh. Nasih, SE., MT., Ak., CMA.
NIP. 196508061992031002.
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ABSTRACT

The aim of this study was to determine the marriage couple’s participation in increasing the number of male acceptor in family planning programs in Makassar City.

This was a descriptive study using qualitative approach. There were 10 respondents involve in this study, which was taken in two area in Makassar; Balang Baru and Parang Tambung. Respondent was drawn using snowball sampling technique from couples in childbearing age who become family planning acceptors.

The result shows that there was high level of confidence in the use of male contraception, there was an increasing number on wife’s normative beliefs in the use of male contraception, and there was no effect in the use of male contraception to work and daily activities. However, there was still a lack of availability of male contraception choices in contributing to the improvement of the male acceptor in family planning programs.

In order to increase men’s knowledge about family planning program there should be information provides through the mass media. Male contraception method should be applied to family that has been fulfill the qualification.

Keywords: family planning program, male contraceptives, male’s participation

INTRODUCTION

Male participation in family planning program is basically the participation of men/husbands who are couple in reproductive age to support the implementation of the national family planning program. Male participation can be shown in the form of their participation to become acceptors of family planning program. The importance of men’s engagement in family planning program and reproductive health was based on the men’s role as a sexual and reproductive partners, so it is very reasonable for both men and women to share the responsibility and contribute equally to achieve sexual life’s satisfaction and to prevent disease as well as reproductive health complications.

In Makassar city, the number of reproductive age couple is the highest among all districts/cities in South Sulawesi. At the end of 2013, there were 168,423 reproductive age couple which 628 of them were vasectomy acceptors, and 4,160 of them were condom users. At the end of 2014 the number of reproductive age couple increased to 175,164, where 659 of them were vasectomy acceptors and 5,293 of them were condom users (BKKBN, 2015). Especially for Tamalate District, the number of reproductive age couples increased from 11,507 couples in 2014 to 15,564 couples at the end of 2015.

The aims of this study was to determine the participation of married couples based on wife’s normative beliefs, the availability of male contraceptive choice, and the effect of using a male contraceptive on work activity in increasing the number of male acceptors in family planning programs in Tamalate district Makassar City.
MATERIAL & METHOD

This was a qualitative research using descriptive approach. This study was conducted to reveal the couple's participation in family planning programs based on wife's normative beliefs, the availability of male contraceptive choice, and the effect of using a male contraceptive on work activity. There were 10 informants in this study obtained from snowball sampling method.

RESULT

a) Wife’s normative beliefs

The wife’s normative belief in this research was basically the view or what was known and understood by wife about contraceptive used by their husband. This study interview started with informant "D". He said that he found the support of his wife, more or less have a role or influence in his contraceptive use.

"My wife is very supportive when I use this contraceptive, because she does not have to worry anymore about getting pregnant and I no longer feel worried when my wife injecting or take a pill that made her headache and vomiting and my feelings during intercourse remains comfortable." ("D", 52, 2016).

Similar further statement from informant "H" and "K" who was asked about how the wife’s beliefs associated with vasectomy as the use of male contraceptives method.

"My wife believe that if I use vasectomy, she is no longer has to worry about having contraceptive and we have mutual trust that this is the best for our family." ("H", 47, 2016).

Informant "K" even was accompanied by his wife during the process of vasectomy.

"I'm feel glad because my wife believes and she even accompany me when I’m having vasectomy, so I felt calm and not afraid during the process." ("K", 49, 2016).

b) The availability of male contraceptive choice

Informant "D" as a vasectomy acceptor stated that there was still a lack of availability of male contraceptive choices. Although the for vasectomy method the procedure took only less than 5 minutes.

"I feel like there are still lack of availability of contraceptive method for men, I remember when I’m having the procedure (vasectomy) it’s not taking so long, if I remember correctly, it was only (take) five minutes. Alhamdulillah, now it’s almost been 10 years and I still feel comfortable with it" (D , 52, 2016).

Funny statement uttered from informant "H" when he was asked about the availability of male contraception on the market. While laughing, he expects that one day there would be also injectables contraceptive method reserved for men.

"I think that there are not so many choice for male contraceptive so I just play it safe, I only do it once but it works forever. Although I already have 3 children, but we were grateful. If only there is an injecting method for male contraceptive that would be much better". ("H", 47, 2016)

Similar statement also expressed from each informant, "L", "A", "S", "N", "R", "B" and "G" when they were asked about their wife’s believe about the use of male contraceptive, informant "L" who use condoms as a contraceptive explained the importance of his wife’s role and cooperation regarding the male contraceptive.

"My wife believe that as long as I use condom, she will not get pregnant. Because without my wife’s cooperation, I will surely be fail as condom user. That is why, I will keep using condom as long as my wife support me "("L", 44, 2016).
contraceptive. They said that the availability of male contraceptives (vasectomy and condoms), were still very limited. They prefers to have vasectomy because they understand about it more than condoms.

Informant "L" hope that someday, there would be types of male contraception which were similar to implant. Later other than as contraceptives, implant can also be used as a method to make them look ageless, as it is commonly used by women.

"In my opinion, a contraceptive for men is still limited. That is because there is only one that I think is good and not difficult to use, namely condoms. Suppose there are tools like implant that is inserted in the arm, can make the body younger and do not have side effects, I may have it. But what to say, no implant for men so I chose a condom". ("L", 44, 2016)

Different opinion expressed by informant "G" 37-year-old men who use condom as his contraceptive method. He revealed that it was so easy to buy condoms in pharmacies or mini market.

"I feel male contraceptive has been available everywhere. Condoms are sold freely, either in Indomaret near my home as well as in pharmacies nearby. In fact, I also saw health workers gives free condoms to married couples. ("G", 37, 2016)

c) The effect of using a male contraceptive on work activities

Informant "D" who use vasectomy as contraceptive always feel motivated at work. This because he felt that he could fullfil his family daily needs doing jobs that could make money. Moreover he felt that he could concentrate on his work everyday.

"During the time I become a vasectomy acceoptor, I feel more passionate in doing my job everyday because my family needs can be fulfilled." ("D", 52, 2016)

Opposite statement was coming from informant "H" who was also a vasectomy acceptor. He felt pain shortly after having vasectomy procedure. However, it did not last long, two days later he could already doing activity as usual.

"At the begining not long after the procedure (vasectomy), I did not go to work for 2 days because there is a bit of pain but the next day I had started to work again". ("H", 47, 2016)

Informant "K", "S", "N" and "R" which also having vasectomy felt no effect after the procedure. Their statement was represented by the statement of informant "K" as follows:

"There are no side effects, because it does not interfere my work activity. I also dont feel any changes after having the procedure and when I’m having intercourse with my wife. In fact my passion increase because of the thought that my wife would not get pregnant again". ("K", 49, 2016)

Other informants, "L" and "A" who choose condoms as their contraceptive method said that they did not feel any effect in using condom. When they were asked for a response about the effect caused by the use of condoms, informant "L" loudly answered that there was no effect. However, he also said that the level of comfort when having intercourse with his wife slightly reduced when using condom.

"For the effect on work activity in using condom as contraceptive, I feel nothing. My work activity remains as usual. although when having intercourse I feel less comfortable". ("L", 44, 2016)

Similar statement also expressed by informant "B" and "G" who prefer condoms as a contraceptive method. They expressed their opinion regarding whether or not there was an effect of contraceptive use on their work activity. Informant "B" firmly replied that there was no effect whatsoever on his work activity as a driver after using condom.

"There is no effect on my work activity. In fact, my work activity goes well and I can be
more concentrate on my daily activities as driver". ("B", 41, 2016)

Similar opinion also said by informant "G" about the effect caused by the use of condoms in his daily activities as civil servants.

"As long as I use condom, it does no affect my work activity as civil servants. And I am even more excited to work because my mind’s burden about family at home is reduced because my wife can focus to take care of our children ". ("G", 37, 2016)

**DISCUSSION**

a) The wife’s normative beliefs

The wife’s opinion about male contraceptive sometimes become an obstacle to male’s participation in family planning program. Environment, society, and family, including wife/husband each have their own perspective on male contraceptive and also become one reasons that affect male’s participation in family planning program.

When we discuss about reproduction, we also discuss about relationship between husband and wife, as both are reproductive partners. We can see that often there is a husband who does not support his wife to participate in family planning program and vice versa, wife often does not support her husband to participate family planning program. Obviously this is due to many negative rumors about a male contraceptive among society and eventually become negative beliefs for both husband and wife, especially if it is not based on positive knowledge about male contraceptive.

The results implies that all informant’s had supports from their wives in using contraceptives. This is because the side effects that caused by male contraceptive is lower compare to female contraceptives. Male contraceptive considered to be safer because it is believed to prevent sexual transmitted diseases when compared to female contraceptive, which can cause side effects such as headaches, weight gain, breast sore, bleeding, and irregular period. This effect could last forever as a result of the use of female contraceptive because the hormones will continue to runs in their body. This become the reason why all informant’s wife approved their husband in using contraceptive. The results of this study are parallel with a study in D.I. Yogyakarta, which claims around 70% wives agreed if their husband participate in family planning program.

b) The availability of male contraceptive choice

The lack availability of male contraceptive choice is suspected to be the reason of low active male participant in family planning program. There are only two contraceptive choice, condoms and vasectomy. Seeing this problem, government and some research agencies do not remain silent, they have been conducting research to create more male contraceptive alternatives in order to be able to match a wide range of choices in female contraceptive.

In this study, all informants who choose condoms as their contraceptive stated that the reason was because it was easier to get, while the informants who choose vasectomy as their contraceptive method stated that their reason was because health workers has already provided informations and suggested them to have vasectomy since it was very effective and affordable due to promotion from government’s family planning program.

This results were similar with a study conducted by Zein (2013) in West Java and Sumatra about male contraceptive that showed there were only two kinds of male contraceptive; condoms and vasectomy. Perhaps this was the reason why all informants said that the availability of male contraceptive was very limited. Most of them expected
another alternatives for male contraceptive method.

c) The effect of using a male contraceptive on work activity

Male participation in using contraception are often associated with the side effects or the impact that will occur during and after using contraception. Husband who has a great responsibility in making a living for his wife and children will have many considerations when it comes to the family economy. High income and many children would not affect family economy, but what about husband who have limited income with many children, this surely would affect the welfare of the family.

The husband who is thinking about the future will choose to use contraception for the sake of spacing and limiting his wife's pregnancy, so the wife could avoid the high risk complications due to repeated pregnancy and childbirth. They will also have more time that can be shared and devoted to their children if the number is small. Results from the informants indicated that almost all of them stated that the use of male contraceptive did not have any effect on their daily working activities. The use of male contraceptive is indeed expected not to have bad effect on working activities.

This result is parallel with research conducted by Syaifuddin (2014), which illustrated that the husband have a sense of high responsibility, although sometimes they did not realize that working with high level activity will affect their health. Especially when it is not supported with exercise, adequate rest and a balanced nutrition, Thus, the effect of perceived fatigue will affect the ability to reproduce.

CONCLUSION

1) The wife’s normative beliefs about male contraceptive has been increased because of the side effects caused by male contraception was lower than female contraceptives.

2) The availability of male contraceptive choices were still considered to be very limited with only 2 option; condom and vasectomy.

3) There was no impact on the use of male contraception to work and daily activities.

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Lembaga Penelitian Universitas Indonesia
UNDERSTANDING BARRIERS OF CONTRACEPTIVE USE AMONG WOMEN IN INDONESIA

Dwi Martiana Wati\textsuperscript{1}, Andrei Ramani\textsuperscript{1}, Iken Nafikadini\textsuperscript{2}

\textsuperscript{1}Department of Epidemiology, Biostatistics and Population, Faculty of Public Health, University of Jember, Kalimantan Rd. 37 Jember, East Java, Indonesia
\textsuperscript{2}Department of Behavioral Sciences, Faculty of Public Health, University of Jember, Kalimantan Rd. 37 Jember, East Java, Indonesia
Email: dmartiana@unej.ac.id

ABSTRACT

Family Planning is part of the basic rights of individuals and families. Through family planning, an individual or a family has opportunities for planning their family life by limiting pregnancies and spacing births. If family planning is done properly, it will increase the possibilities for improving mothers’ and children’s health, even improving family welfare. But in fact, the family planning program in Indonesia is still encountered many hindrances, whether internal or external barriers. One of that hindrances is the unmet need. The high unmet need will allow unintended pregnancies which could lead to an increasing abortion, which in turn will increase MMR and IMR. If this condition is not immediately get serious handling, the SDGs will not be achieved. One effort that can be done to overcome these problems is to determine barriers faced in family planning program. IDHS is national survey that can provide demographic and reproductive health data, including family planning program. This research was intended to analyze determinants of barriers of contraceptive use, especially among women. Chi-square test showed a significant association between contraceptive use and age group as well as literacy among women, educational attainment, profession, wealth index, women’s autonomy, access to the media, including media that conveyed about family planning. Finally, visiting of family planning clerk also had significant association with contraceptive use.

Keywords: Association, Barriers, Contraceptive Use

INTRODUCTION

Rapid population growth was considered a potential hindrance to economic development \cite{4}. In response to population-related issues, many countries have implemented many development programs, including Indonesia. The most important program that widely implemented was the Family Planning Program. For over three decades, family planning has not only contributed in reducing fertility rate but also improving family welfare. That’s why the discussion about family planning was not limited to family planning as a program, but also
family planning as a basic right for family, included individual within it. Through family planning, an individual or a family has opportunities for planning their family life by limiting pregnancies and spacing births. The efforts for family planning was associated with contraceptive use, both were conventional or modern ones.

IDHS reported that Indonesia’s fertility rate has declined since 1980s until 1990s, but in 2010 still remained stagnant [4]. It meant that its implementation still deal with many hindrances. One of the hindrances was the unmet need. Addressing the unmet need, the family planning programs has been proposed as a major strategy for reducing fertility rate in developing countries [1]. Many studies has describes what is meant by the term of “unmet need”. Casterline and Sinding considered that the term “unmet need” was not asked directly from respondents whether they perceived an inconsistency between their fertility preferences and contraceptive practice [2]. Therefore this term was associated with the high incidence of pregnancies that are reported as unintended and the large numbers of births that are reported as unwanted. Meanwhile Bhushan gave wider description about the term “unmet need” as the condition of fecund women of reproductive age who do not want to have a child soon or ever but are not using contraception [1]. In attention to both explanations and others that were related, it was concluded that the term “unmet need” was associated with not using any modern contraception.

Many researches have been developed to determine any possible barriers that occur together with contraceptive use. Generally they are separated into internal and external barriers, based on the sources of those barriers. Internal barriers to use modern contraceptive includes the lack of knowledge and the fear of side effect [5]. On the other hands, religious consideration, husband apposition, and the lack of family planning promotion were considered external ones. For decreasing odds of discontinuation, high quality services given could be considered [3]. This high quality services given included high level of information given by one-to-one counseling that could increase acceptor’s satisfaction.

According to recent IDHS in 2012, IDHS covered the measurement of trend in fertility and contraceptive prevalence, along with factors that affected, such as marital status, residence, education, knowledge, availability of contraception, and contraceptive providers’ services. Therefore this study was intended to determine barriers faced by family planning program in Indonesia, both internal and external ones. Factors considered as internal barriers were demographic characteristics, such as age, residence, educational attainment, job status, and marital status, literacy, also women’s autonomy and wealth quintiles. Then access to family planning information and visiting of family planning clerk were considered as external barriers.

**MATERIAL & METHOD**

This study was a cross-sectional national survey and carried out by Statistics Indonesia (BPS) in collaboration with the National Population and Family Planning Board (BKKBN) and the
Ministry of Health (MOH). This survey has been conducted regularly since 1990s. The population referred here were 15 – 49 years old women. The total number of female respondents in this survey were 45,607 respondents. But in order to meet the objective of this study, the respondents selected were 15 – 49 years old which had sexual experiences, included married women or women that had been living together with their mates. The number of selected women here were 30,192 respondents.

Data collected by using Women’s Questionnaire of IDHS. Afterward, the data analyzed with Chi-Square Test, where p < 0.05 determining the significance level for association.

RESULT

A total number of 30,192 women were interviewed. Among them, nearly 75% were currently using modern contraception. While the rest, more than 25% women, were reported not using modern contraception.

More than one-thirds of respondents (38.5%) were 30 – 39 years old. Their mean age were 34.45 years old (±8.2). According to the previous study [1] they were liable to using contraception for limiting pregnancies. On the other hands, younger women were liable to spacing births. As shown in Table 1, the older women tend to use contraception compared with the younger ones. But in women over 30 years old, the odds became lower than the younger ones. Based on their marital status, most of them were married. Only 1% respondents confessed that they were living together with their mates. The association test shown that women who were living together with their mates tend not to use contraception, more than 3 times higher than others who were married.

Table 1. Characteristics of Respondents

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Contraceptive Use</th>
<th>p-value</th>
<th>Odds</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Using</td>
<td>Not using</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 – 19</td>
<td>466 (1.5%)</td>
<td>287 (1%)</td>
<td>0.004*</td>
<td>1.262</td>
</tr>
<tr>
<td>20 – 24</td>
<td>2,451 (8.1%)</td>
<td>776 (2.6%)</td>
<td>&lt;0.0001*</td>
<td>2.445</td>
</tr>
<tr>
<td>25 – 29</td>
<td>4,222 (14%)</td>
<td>1,101 (3.6%)</td>
<td>&lt;0.0001*</td>
<td>2.981</td>
</tr>
<tr>
<td>30 – 34</td>
<td>4,616 (15.3%)</td>
<td>1,143 (3.8%)</td>
<td>&lt;0.0001*</td>
<td>3.139</td>
</tr>
<tr>
<td>35 – 39</td>
<td>4,594 (15.2%)</td>
<td>1,262 (4.2%)</td>
<td>&lt;0.0001*</td>
<td>2.830</td>
</tr>
<tr>
<td>40 – 44</td>
<td>3,662 (12.1%)</td>
<td>1,414 (4.7%)</td>
<td>&lt;0.0001*</td>
<td>2.013</td>
</tr>
<tr>
<td>45 – 49</td>
<td>2,362 (7.8%)</td>
<td>1,836 (6.1%)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living together</td>
<td>136 (0.4%)</td>
<td>166 (0.6%)</td>
<td>&lt;0.0001*</td>
<td>0.282</td>
</tr>
<tr>
<td>Married</td>
<td>22,237 (73.7%)</td>
<td>7,653 (25.3%)</td>
<td>0.252</td>
<td>0.970</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>11,867 (39.3%)</td>
<td>4,206 (13.9%)</td>
<td>0.252</td>
<td>0.970</td>
</tr>
<tr>
<td>Urban</td>
<td>10,506 (34.8%)</td>
<td>3,613 (12%)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Educational attainment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No education</td>
<td>603 (2%)</td>
<td>653 (2.2%)</td>
<td>&lt;0.0001*</td>
<td>0.404</td>
</tr>
<tr>
<td>Primary</td>
<td>8,105 (26.8%)</td>
<td>2,878 (9.5%)</td>
<td>&lt;0.0001*</td>
<td>1.231</td>
</tr>
</tbody>
</table>
### Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Contraceptive Use</th>
<th>p-value</th>
<th>Odds</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Using</td>
<td>Not using</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>11,299(37.4%)</td>
<td>3,254(10.8%)</td>
<td>&lt;0.0001*</td>
<td>1.517</td>
</tr>
<tr>
<td>More than secondary</td>
<td>2,366(7.8%)</td>
<td>1,034(3.4%)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Literacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blind/usually impaired</td>
<td>84(0.3%)</td>
<td>62(0.2%)</td>
<td>&lt;0.0001*</td>
<td>0.429</td>
</tr>
<tr>
<td>Can’t read at all</td>
<td>1,381(4.6%)</td>
<td>1,121(3.7%)</td>
<td>&lt;0.0001*</td>
<td>0.391</td>
</tr>
<tr>
<td>Can read part or a whole sentence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployment</td>
<td>9,317(30.9%)</td>
<td>3,014(10%)</td>
<td>&lt;0.0001*</td>
<td>1.138</td>
</tr>
<tr>
<td>Employed</td>
<td>13,056(43.2%)</td>
<td>4,805(15.9%)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Wealth quintile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowest</td>
<td>5,121(17%)</td>
<td>2,337(7.7%)</td>
<td>&lt;0.0001*</td>
<td>0.744</td>
</tr>
<tr>
<td>Second</td>
<td>4,761(15.8%)</td>
<td>1,451(4.8%)</td>
<td>0.013</td>
<td>1.114</td>
</tr>
<tr>
<td>Middle</td>
<td>4,381(14.5%)</td>
<td>1,314(4.4%)</td>
<td>0.006</td>
<td>1.132</td>
</tr>
<tr>
<td>Fourth</td>
<td>4,177(13.8%)</td>
<td>1,382(4.6%)</td>
<td>0.564</td>
<td>1.026</td>
</tr>
<tr>
<td>Highest</td>
<td>3,933(13%)</td>
<td>1,335(4.4%)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Women’s autonomy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>17,156(56.8%)</td>
<td>7,819(25.9%)</td>
<td>&lt;0.0001*</td>
<td>0.687**</td>
</tr>
<tr>
<td>Yes</td>
<td>5,217(17.3%)</td>
<td>0(0%)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Access to FP information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>11,513(38.1%)</td>
<td>4,553(15.1%)</td>
<td>&lt;0.0001*</td>
<td>0.760</td>
</tr>
<tr>
<td>Yes</td>
<td>10,860(36%)</td>
<td>3,266(10.8%)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Visiting FP clerk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>20,959(69.4%)</td>
<td>7,452(24.7%)</td>
<td>&lt;0.0001*</td>
<td>0.730</td>
</tr>
<tr>
<td>Yes</td>
<td>1,414 (4.7%)</td>
<td>367 (1.2%)</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

*significant under $\alpha = 5\%$

About 48.2% respondents have completed their secondary level or part of secondary level. It was more than the others that has just completed on primary level, even no education at all. Only one-tenth of respondents have gained higher educational level. Based on their educational attainment in Table 1, it was found that the more level gained, the higher odds for them to use contraception. But among women with higher educational level, it was found that the odds for using contraception became lower than others with educational level below. Women with secondary level had almost two times higher for using contraception than the higher ones.

Because of this attainment, it was possible for them to get appropriate job. It was shown that almost three-fifth of respondents were employed. But the analysis proved that the unemployment women tend to use contraception than the employed ones. Furthermore it is also known that more than 50% respondents had middle – high economic status than the rest. When compared by wealth quintile, it is proved that the lowest ones tend to not using contraception. While the
second and the middle one tend to use contraception than the richest ones.

As seen in Table 1, the odds for using contraception were nearly the same between women who lived on rural and those in urban area. It meant that the Family Planning program has reached their target regardless where they lived, whether on rural or urban area. All the factors above then formed women’s autonomy. It was measured by 6 indicators: decision to use contraception, decision to use wife’s income, decision to have medical examination, decision to buy durable goods, decision to visit relatives, and decision to use husband’s income. All of indicators could be decided by women herself, women as wife with their husband or others, or by others except women. Then, it could be said that women who had authorities to decide all of those indicators, were having autonomy on their family life. Based on women’s autonomy, it was known that most of them were not having autonomy (82.7%). And women who had no autonomy on their family life were liable to not using contraception than the others who had it. It took nearly 1.5 times higher for not using contraception.

As we know, barriers for women not using contraception began with the lack of knowledge about contraception. It could be minimized by giving them appropriate information about family planning, including the right contraceptive methods. Kind of this information could be delivered by mass media, such as television, radio, and magazines/newspapers and by visiting Family Planning clerk to respondent as target of Family Planning program. IDHS accommodated these two information. Based on access to Family Planning information and visiting Family Planning clerk, it was proved that the women who had no access to Family Planning information and had not been visited by any Family Planning clerk were liable not to using contraception. It took more than 1.3 times higher.

**DISCUSSION**

All of the results above proved that demographic characteristics and socio-economic status were associated with contraceptive use among women in Indonesia, except residence. It meant that the barriers for using contraception existed, whether internal or external barriers.

Based on the widespread adoption of family planning on many countries, it was known that family planning brings one of the most dramatic changes of the 20s century. The most dramatic changes was family planning could prevent many more deaths, particularly in the poorest countries by saving women’s lives, children’s lives, adolescents’ lives, reducing deaths from AIDS, and helping governments achieve their national and international development goals [6].

For gaining those goals, determining barriers for using contraception is necessity. The result above proved that age, marital status, educational attainment, literacy, job status, wealth quintile, women’s autonomy, access to Family Planning information, and visiting Family Planning clerks were associated with contraceptive use. The higher prevalence of contraceptive use was on 20 – 34 years old women, married, having secondary level on educational attainment,
unemployment, women who could read, middle quintile above, having autonomy, access to Family Planning information, also ever visited by Family Planning clerk.

Focusing on family planning program, it will be valuable if the reasons for using contraception were considered on the analysis, whether for limiting or spacing births. According to Bhushan [1], the separated reasons can lead to different method. On the other hand exploring KAP (knowledge, attitude, practice) toward Family Planning and more complex external barriers, such as husband’s disapproval and religious consideration are also substantial in developing family planning program. Multilevel analysis can be considered to the next analysis for determining any disparities of contraceptive use among women.

CONCLUSION

The findings of this study show that the family planning program should be focus on younger married women, having no education or primary level, employed women, lowest quintile, having no autonomy on their family life and access to Family Planning information, and never visited by Family Planning clerk. The contraceptive use among women in Indonesia are mostly influenced by contextual factors that rely among them. Developing new method for giving appropriate information is also suggested.

ACKNOWLEDGEMENT

The data used in this study was supported by Measures DHS, ICF International.

REFERENCES


THE INFLUENCE OF HEALTH EDUCATION USING THE WISH AND DRIVE METHODS TOWARD THE BEHAVIOR OF EARLY DETECTION FOR CERVICAL CANCER WITH IVA METHODS IN SEMAMPIR VILLAGE, KEDIRI DISTRICT

1Eko Winarti, 1Lina Kartika Sari

1 D.IV Midwifery Educatve, Health Sciences Faculty of Kadiri University, Email: ekowinarti@unik-kediri.ac.id

ABSTRACT

Cervix cancer is the first women killer in Indonesia and the incidence will continue to increase if no prevention efforts implemented. The women’s motivation for early detection of cervical cancer is very low, hence, more cancers are found at advanced stage. The purpose of this research is to analyze the influence of health educational wish and drive methods toward the behavior of cervix cancer patients towards early detection.

This research used quasy experiment pre post test design with a comparison group. The population in this research was all women of childbearing age who were married and live in the village of Semampir, Kediri District in 2015. The sample was part of women of childbearing age who were married and meet the inclusion and exclusion criteria. The sample was 32 women which then divided into 2 groups namely 16 persons for the intervention group and 16 persons for the control group. Sampling technique used was a purposeful sampling. The independent variable was health educational wish and drives method, while the dependent variable were knowledge, attitude and the implementation of early detection of cervical cancer which measured using questionnaires that have been tested for its validity and reliability. The data was analyzed using Wilcoxon Signed Rank test.

In the treatment group, there was significant influence of educational wish and drive methods toward the knowledge of early detection for cervical cancer (p-value=0.001). Similar results also shown for the change in attitude (p-value=0.037). The influence of educational wish and drive methods toward the implementation of cervix cancer early detection was also statistically significant (p-value=0.005). While in the control group after being given an education by conventional methods, the knowledge was statistically improved (p-value=0.014), so as the attitude (p-value=0.037). However, there was no influence of educational conventional methods toward the implementation of cervix cancer early detection (p-value=0.083).

There was significant influence of education wish and drive methods toward the behavior of cervix cancer early detection in Semampir Village, District of Kediri. It is suggested that an effort to improve the coverage of early detection for cervical cancer through health education could consider the use of the wish and drive methods.

Keywords: Health Education, Wish and Drive Methods, Behaviour, The Early Detection of Cervix Cancer IVA Method

INTRODUCTION

According to data from the World Health Organization (WHO), in developing countries, every two minutes a woman dies because of cervical cancer (Nurwijaya, 2010). Cervical cancer is encountered in many developing countries
like Indonesia. The high number of deaths from cervical cancer does not have special symptom.

Based on the data from the International Agency for Research on Cancer (IARC), the prevalence of cervical cancer in the world got 16,000 per 100,000 woman (IARC, 2012). Among them, more than 80% victims came from developing countries in South Asia, South East Asia, Sub-Saharan Africa, Central America and South America (Nadia, 2009). The number of cervix cancer patients in Indonesia was 17 per 100,000 women among which was accumulated in Java and Bali. The number could be increased into 25% in 10 years later without prevention (Rasjidi, 2012).

East Java Province become the biggest contributor of cervix cancer cases in Indonesia (Irawati, 2012). Based on the record from the Public Health Government, the number of cervix cancer patients increase since 2009 (671 women), to 2010 that affected 868 women, in 2011 was 1,028 women, in 2012 was 1,478 women and in 2013 was 1,987 woman (Surya, 2015). While the visit of cancer cervix patient in Kediri Local Hospital also increase every year. In 2011 the visit was from 27 women, in 2012 was 29 women, in 2013 was 84 women, in 2014 was 40 women and on January until July 2015 was 42 women.

It was found a serious stadium for cervix cancer in Indonesia [Samadi, 2011]. Mostly, the women whose got cervix cancer didn’t get screening test or didn’t continue the process of examination. The main causes of cervix cancer were an absenteesm for screening test (Emilia, et al., 2010). The implementation of early detection of cervix cancer is still low (2.45%), so it is necessary to do the hard effort for achieving the target for 50% early detection during 5 years for the women at age of 30-50 years (Wahidin, 2015). The implementation of early detection of cervix cancer in Kediri is less than 1% from the target of the Public Health authority in Kediri District, which was 10%.

Research done by Hansen, et al. (2011) revealed that the factors influencing the visitation of early detection cervix cancer were: the woman whose done screening test before, sexual transmitted disease history, the user contraception, condom user, marital status (cohabiting), no smoker and has been delivery baby. Besides, the reason of visitation increased with age. The woman disobedient toward the cervix cancer screening is influenced by: physical examination, medical staff, test procedure and the risk low knowledge. The reason why some women obey toward the cervix cancer screening is because the women are afraid of getting cancer, good relationship with medical staff, adequate knowledge, understand the risk and the importance of routine examination (Arkerson, et al., 2009).

The phenomena about the low number of early detection behavior of cervix cancer can increase the morbidity and mortality of cervix cancer in Indonesia. It is necessary to implement the filtering to most of women to avoid cervix cancer. Ideally, this program should aim for the 80% of population at risk using an effective method to detect the change of pre-cancer with limited environment and ressource (Depkes, 2007). Regular cervix cancer screening could mostly avoid the development of cervical cancer (Emilia, et al., 2010).

It is better to use a multisector approach to increase the early detection of cervix cancer. The doctor’s recommendation and society involvement is also an effective strategy to increase early detection of cervix cancer (Donelly, 2006; Fylan, 1998). Attempts to change the behavior of public health can be achieved by increasing knowledge. Increased knowledge can be done through persuasion, solicitation, providing information through health education.
One method that can be used to increase the motivation of people is the wish and drive method. Wish and drive method is a method that combines health education with counseling. This method involves the stimulation that is expected to increase public knowledge and can increase motivation and change the behavior of women in the early detection of cervical cancer (Mubarok, 2009).

The purpose of this research is to analyze the influence of health educational using the wish and drive methods toward the behavior of cervix cancer early detection in Semampir Village Kediri District in 2015. The hypothesis of this research is there is significant influence of health educational using the wish and drive methods toward the behavior of cervix cancer early detection in Semampir Village Kediri District. The research question in this research is: “How is the influence of health educational using the wish and drive methods toward the behavior of cervix cancer early detection in Semampir Village Kediri District?”

MATERIAL AND METHOD

This study used experimental research method with quasi experimental approach. The intervention in this research was health educational using the wish and drive methods toward the behavior of cervix cancer early detection in Semampir Village Kediri District in 2015.

The target population of this research were 820 women of childbearing age in Semampir Village Kediri District in 2015. The sample was part of the population who meet the inclusion and exclusion criteria. The sample size was 32 person which was divided into 2 groups, namely 16 persons for intervention group and 16 persons for control group (based on the sample size in experimental study from Federer). The technique of selecting a sample was using purposive sampling technique.

The independent variable of the research was the wish and drive methods in health education. The dependent variables were: the women’s knowledge, attitude and behavior for engaging in the early detection of cervical cancer. The method to control the disturbance for this study was using the inclusion and exclusion criteria, and also using quasy experiment design where there was control and threatment group.

The wish and drive methods was defined as the health education activities about cervical cancer and how early detection of cervical cancer should be done by combining health education and counseling. Knowledge was defined as the result of knowing a woman after they were done with early detection of cervix cancer. Attitude was defined as the view or readiness of women to do early detection of cervix cancer. Implementation of cervical cancer early detection methods IVA is defined as a direct action committed by women in the early detection of cervical cancer by using IVA.

The data collected was primary data from the field using a questionnaire. The primary data were the measurement of knowledge, attitude and implantation variable before and after treatment. The wish and drive methods in health educational was given in the intervention group for two weeks. After the treatment, re-measurement using questionnaire was conducted to assess the change in the knowledge, attitude and implementation of early detection of cervix cancer. Then data collected was computerized by several steps: editing, coding, scoring, and entering data. The Wilcoxon test statistic was employed to analyze how far the influence of health educational using the wish and drive methods toward the behavior of cervix cancer early detection.
RESULT

As seen in table 1 that can be seen based on calculation obtained from Wilcoxon rank test, there was significant influence of the wish and drive method in health education toward the knowledge of early detection of cervix cancer (p-value=0.000).

<table>
<thead>
<tr>
<th>Knowledge Before Treatment</th>
<th>Knowledge After Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>Good</td>
<td>5</td>
</tr>
<tr>
<td>Adequate</td>
<td>1</td>
</tr>
<tr>
<td>Less</td>
<td>0</td>
</tr>
<tr>
<td>Amount</td>
<td>6</td>
</tr>
<tr>
<td>α=0.05</td>
<td></td>
</tr>
<tr>
<td>p value=0.001</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Cross Tabulation of Knowledge of Early Detection of Cervix Cancer for Treatment Group Before and After Intervention of the Wish and Drive Method in Semampir Village, Kediri District 2015

The Wilcoxon Rank test showed significant value (p-value=0.014) hence, it can be concluded that H₀ was rejected and H₁ was accepted. It means that there was significant influence of convensional health education toward the knowledge of early detection of cervix cancer IVA methods in Semampir Village, Kediri District 2015 (as seen in table 2).

Table 2. Cross Tabulation of Knowledge of Early Detection of Cervix Cancer for Control Group Before and After Convensional Health Educational in Semampir Village, Kediri District 2015

<table>
<thead>
<tr>
<th>Knowledge Before Treatment</th>
<th>Knowledge After Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>Good</td>
<td>0</td>
</tr>
<tr>
<td>Adequate</td>
<td>4</td>
</tr>
<tr>
<td>Less</td>
<td>7</td>
</tr>
<tr>
<td>Amount</td>
<td>11</td>
</tr>
<tr>
<td>α=0.05</td>
<td></td>
</tr>
<tr>
<td>p value=0.014</td>
<td></td>
</tr>
</tbody>
</table>

Based on table 3, the Wilcoxon Rank test showed significant value (p-value=0.037) so it can be concluded that H₀ was rejected and H₁ was accepted. It means that there was significant influence of the wish and drive methods in health educational toward the attitude of early detection of cervix cancer IVA methods in Semampir Village, Kediri District 2015.

Table 3. Cross Tabulation of Attitude of Early Detection of Cervix Cancer For Treatment Group Before and After Intervention of the Wish and Drive Methods in Health Educational in Semampir Village, Kediri District 2015

<table>
<thead>
<tr>
<th>Attitude Before Treatment</th>
<th>Attitude After Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>N (%)</td>
</tr>
<tr>
<td>Good</td>
<td>7</td>
</tr>
<tr>
<td>Adequate</td>
<td>9</td>
</tr>
<tr>
<td>Less</td>
<td>16</td>
</tr>
<tr>
<td>Amount</td>
<td>0</td>
</tr>
<tr>
<td>α=0.05</td>
<td>Negative rank=2</td>
</tr>
<tr>
<td>p value=0.037</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 showed that the Wilcoxon Rank test showed p-value=0.037 (<α=0.05), hence, it can be concluded that H₀ was rejected and H₁ was accepted. It means, there was significant influence of convensional health education toward the attitude of early detection of cervix cancer IVA methods in Semampir Village, Kediri Distric, 2015.

Based on table 5, the obtained Wilcoxon rank test showed significant
value (p-value=0.005), therefore H₀ was rejected and H₁ was accepted. It means that there was significance influence of the wish and drive methods in health educational toward the implementation of early detection cervix cancer IVA methods in Semampir Village, Kediri District, 2015.


<table>
<thead>
<tr>
<th>Implementation Before Treatment</th>
<th>Implementation After Treatment</th>
<th>Yes</th>
<th>No</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>7</td>
<td>8</td>
<td>15 93.8</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>0</td>
<td>1</td>
<td>1 6.2</td>
</tr>
<tr>
<td>Amount</td>
<td></td>
<td>7</td>
<td>9</td>
<td>16 100</td>
</tr>
<tr>
<td>α=0.05</td>
<td></td>
<td>Negative rank=0</td>
<td>Ties=8</td>
<td></td>
</tr>
<tr>
<td>p value=0.005</td>
<td></td>
<td>Positive rank=8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on table 6, the Wilcoxon Rank test revealed the p-value=0.083, hence the H₀ was accepted and H₁ was rejected. It means that there was no significant influence of the convensional health education toward the implementation of early detection of cervix cancer IVA methods in Semampir Village, Kediri District, 2015.

DISCUSSION

Knowledge is very important cognitive domains form one's actions. Knowledge can be influenced by the respondents' education. Education is the process of skill development in the form of a person's attitudes and behaviors developed in the community. The higher level of education a person the more accepting of information so the more knowledge they will have. Reversely, the lower one's education, it will obstruct the attitude and behavior of people in receiving the information and the value of the newly introduced information (Nursalam, 2009).

After the intervention using the wish and drive method, most of respondents (81.25%) have good knowledge level. This was because the wish and drive method did not only provide information but also aimed to increase the knowledge of respondent hence they will be motivated to partake the early detection of cervical cancer by IVA method. Health knowledge is important because health action is unlikely to happen unless someone gets signaled strong enough to motivate action on the basis of their knowledge.

Attitude is a component that involves subjective emotional attitude of a person against an object. Attitude is not an activity but a predisposition of behavioral measures (Notoadmojo, 2005). After the intervention using the wish and drive method, all (100%) of respondents were having positive attitude. The wish and drive method was incorporating counseling that was considered to be effective strategy to improve attitude. With a positive attitude, it is expected to stimulate positive behavior of early detection of cervical cancer by IVA.


Table 6. Cross Tabulation of Implementation of Early Detection of Cervix Cancer for Control Group Before and After Convensional Health Education in Semampir Village, Kediri District, 2015

<table>
<thead>
<tr>
<th>Implementation before after convensional health education</th>
<th>Implementation after convensional health education</th>
<th>No (%)</th>
<th>Yes (%)</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td></td>
<td>8</td>
<td>50</td>
<td>3 27.3</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>0</td>
<td>0</td>
<td>5 37.5</td>
</tr>
<tr>
<td>Amount</td>
<td></td>
<td>8</td>
<td>50</td>
<td>8 50</td>
</tr>
<tr>
<td>α=0.05</td>
<td></td>
<td>Negative rank=0</td>
<td>Ties=11</td>
<td></td>
</tr>
<tr>
<td>p value=0.083</td>
<td></td>
<td>Positive rank=5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The results of the implementation of the pre-test for early detection of cervical cancer IVA method showed that before the intervention almost entirely (93.8%) respondents did not make early detection of cervical cancer by IVA. Implementation of cervical cancer early detection methods IVA was a form of response, appreciation and individual activities to internal and external environment (Budioro, 2007). Various methods are used to improve the behavior of early detection of cervical cancer by IVA. The wish and drive method also include discussions with peers (peer) because it is considered as an effective way to convey the message and stimulate behavior change.

After being given a wish and drive method, the post-test results showed that the obtained psychomotor of the majority (56.3%) of respondents did early detection of cervical cancer by IVA. This was because the respondents have been aware that the importance of early detection of cervical cancer by IVA. The establishment of new behavior starting from the change of knowledge that continues to change of attitudes and new formed behaviors. Changes in a person's behavior can be seen through the perception that was experienced through the senses. Changes in behavior will be successful when a person feels aggrieved by their current behavior. Therefore, health education is indispensable (Notoatmodjo, 2005).

During the implementation of this research, it is gotten some difficulties especially in the process of data taken for woman and husband at work. In order to solve the difficulties, the intervention, questionnaire, and the schedule given must be suited with the respondent’s schedule.

CONCLUSION

To increase the women’s knowledge and attitude towards early detection of cervix cancer, it is better to use the wish and drive method for health education effort.

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Practice, Jossey Bass, San Francisco.
Nadia, 2009. Insidensi Kejadian Ca Cerviks di Indonesia, Jurnal, Jakarta: FKUI
THE RELATIONSHIP OF MIDWIVES’ PERSUASIVE COMMUNICATION TOWARD MOTHER’S ATTITUDE IN GIVING BREASTFEEDING IN PUSKESMAS SUDIANG, MAKASSAR CITY

Fairus Prihatin Idris

Public Health Faculty, Indonesia Moslem University, Indonesia

ABSTRACT

The low exclusive breastfeeding in Indonesia due to a lack of knowledge and attitude of the mother, lack of family support, community, health workers and the government, the promotion of infant formula, social and cultural factors as well as the lack of availability of service facilities maternal and child health. In Puskesmas Sudiang, only 27.4% of babies were exclusively breastfed. This research was a quantitative research with cross sectional study approaches. Samples were selected through accidental sampling with total 57 pregnant women involved in this study. Data were analyzed using fisher-exact test. The result showed that there was a significant relationship between the midwives’ persuasive communication with mother’s attitude (p=0,001) in exclusive breastfeeding. Most of mothers feel comfortable and confident to midwives in providing information about exclusive breastfeeding. Most of the mothers were housewife with experience in gravid 2-3, became a characteristic that facilitates receipt of the information submitted by midwife. It is recommended that midwives can use audiovisual media in giving information about exclusive breastfeeding and need further research about the mother’s actions in exclusive breastfeeding.

Keywords: Midwife Persuasive Communication, Exclusive Breastfeeding

INTRODUCTION

Improvements in early initiation of and exclusive breastfeeding have been noted as major contributors to the improvements in child survival seen over the last two decades (Labbok, 2012). Breastfeeding has many health benefits for both mother and baby. Breast milk contains all the substances that the baby needs in the first six months of life. Breastfeeding protects against diarrhea, pneumonia, reducing the risk of overweight and obesity in childhood and adolescence (WHO, 2015).

World Health Organization (WHO) recommends exclusive breastfeeding to 6 months (Kramer et al., 2002). Infants who are not exclusively breastfed had a 4 times risk of acute respiratory infections (Solomon, 2010) and could provide up to 99% survival (Nurmiati and Besral, 2008).

In Indonesia, data from Riskesdas 2013, showed that the Exclusive breastfeeding coverage was 54.3%. Exclusive breastfeeding coverage of 54.3% of the total number of infants aged 0-6 months or in absolute terms amounted to 1,348,532 babies or baby 0-6 months who were not gain exclusively breastfeeding were accounted for 1.1334.952 babies. The percentage of exclusive breastfeeding in South Sulawesi Province reached to 66.5% (Riskesdas, 2013). In Makassar City exclusive breastfeeding coverage was 72.4% and Puskesmas Sudiang had the lowest coverage of Exclusive breastfeeding in Makassar City namely...
27.04% (Dinkes Kota Makassar, 2015). This data was still far from the national target of 80% (Minarto, 2011).

The low exclusive breastfeeding by mothers in Indonesia are caused by internal and external factors. Internal factors are the lack of knowledge and attitude of the mother, and the external factors are the lack of family support, community, and government health workers, the promotion of formula milk, social and cultural factors, and the lack of availability of service facilities maternal and child health (Prasetyono, 2009).

The causes of the failure of the practice of exclusive breastfeeding were inadequate skill of breastfeeding, the slow response of health workers (Smith et al., 2012). Breastfeeding is essential for optimal growth and development both physically and mentally and intelligence of babies. There-fore, mothers and health professional workers need to give attention to breastfeeding so that the process of breastfeed can be implemented properly (Roesli, 2005).

Based on the background outlined above, then the objective of this study was to determine the relationship of midwive persuasive communication towards mother’s attitude in giving exclusive breast-feeding in Puskesmas Sudiang, Makassar City, 2016.

**MATERIAL & METHOD**

This type of research was a quantitative approach with Cross sectional study design. We used chi-square test to see the relationship between the dependent and independent variables. The respondents were pregnant mothers who lived in the working area of Puskesmas Sudiang with a population of 101 mothers. After collecting data by accidental sampling technique, the study found 57 mothers as respondents. Data were collected by interview using a questionnaire prepared by the researcher.

**RESULT**

<table>
<thead>
<tr>
<th>Characteristics of Respondents</th>
<th>(n=57)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Group (year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20</td>
<td>10</td>
<td>17.5</td>
</tr>
<tr>
<td>20-29</td>
<td>27</td>
<td>47.4</td>
</tr>
<tr>
<td>30-39</td>
<td>17</td>
<td>29.8</td>
</tr>
<tr>
<td>&gt;40</td>
<td>3</td>
<td>5.3</td>
</tr>
<tr>
<td>Gravid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;2</td>
<td>12</td>
<td>21.1</td>
</tr>
<tr>
<td>3</td>
<td>34</td>
<td>59.6</td>
</tr>
<tr>
<td>&gt;3</td>
<td>11</td>
<td>19.3</td>
</tr>
<tr>
<td>Mother’s Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior High School</td>
<td>7</td>
<td>12.3</td>
</tr>
<tr>
<td>Senior High School</td>
<td>47</td>
<td>82.3</td>
</tr>
<tr>
<td>Bachelor</td>
<td>3</td>
<td>5.3</td>
</tr>
<tr>
<td>Mother’s Occupational</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>52</td>
<td>91.2</td>
</tr>
<tr>
<td>Entrepreneur</td>
<td>4</td>
<td>7.0</td>
</tr>
<tr>
<td>Civil Servant</td>
<td>1</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Table 1. Characteristics of Pregnant Mothers

<table>
<thead>
<tr>
<th>Mother’s Attitude</th>
<th>Persuasive Communication</th>
<th>Total</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less</td>
<td>Enough</td>
<td>n</td>
</tr>
<tr>
<td>Negative</td>
<td>3</td>
<td>60.0</td>
<td>2</td>
</tr>
<tr>
<td>Positive</td>
<td>1</td>
<td>1.92</td>
<td>51</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>7.1</td>
<td>53</td>
</tr>
</tbody>
</table>

Most of respondents were in the age group 20-29 years (47.4%) and the least in the age group> 40 years. Most gravid or the gestation period was 2-3 with number 34 (59.6%) and the least was> 3 of 11 (19.3%). The level of education was dominated by mothers with senior high school education level with the number of 47 (82.5%) and the least was Bachelor (5.3%).
respondents worked as Housewife (91.2%) and the least was a civil servant (1.8%).

Based on the table shows that out of five respondents with negative attitudes, there were 60% of mothers who has less persuasive communication of midwives and 40% who gained enough persuasive communication. Among 52 mothers with positive attitude, 1.92% mothers has less persuasive communication of midwives and 98.08% gained enough persuasive communication.

**DISCUSSION**

Attitude is a readiness to react to an object in a certain way. Readiness is meant here is the potential tendency to react in a certain way when individuals are faced with a stimulus that calls for response (Azwar, 2007). The attitude is influenced by personal experience, culture, mass media, certain institutions as well as emotional factors in the individual concerned. It occurs because of the social interaction by individuexperienced, so that individuals interact to form a pattern of attitudes (Azwar, 2008). One of the social interaction performed by pregnant women is in contact with the midwife during antenatal mothers at health centers Sudiang.

In its service midwife deliver health information to pregnant women, among others s is about exclusive breastfeeding. Submission of information is done in the form of persuasive communication that aims to change the attitude of the mother and motivate them to be supportive attitude, receive, respond to, appreciate to feel responsible for exclusive breastfeeding to their babies later. Based on the results of this study showed that most mothers have a positive attitude towards exclusive breast feeding (91.2%). Only 8.8% mothers with negative attitude.

This is consistent with research in Ethiopia have also found a high prevalence of maternal attitude which approximately 97.5% of mothers that consists of a positive attitude towards exclusive breastfeeding (Asfaw et al., 2015). The high positive attitude in the study site because of maternal responses to some statements which are mostly mothers expressed a preference for breastfeeding compared to formula milk for their babies later, considers that breast milk is very good to be given to infants 0-6 months, and the mother does not agree that the mother should give formula rather than leaving the job.

Some women with a negative attitude is because there are mothers who think to not give milk with yellow color (colostrums) because they assume that the yellow breast milk has a bad quality that was not good to babies. Researchers assume that the respondents have a negative attitude towards exclusive breastfeeding due to the erroneous knowledge and lack of information obtained about the benefits of colostrum. In fact, as is well known that Colostrum contain lots of protein and antibody. Although the colostrum slightly but it was able to coat the intestines of infants and protect them from bacteria and able to meet the nutritional needs of infants on the first day of his birth (Prasetyono, 2012).

In addition there were respondents who think that breastfeeding can reduce the beauty and changing the shape of the breast. As research has been done before where mothers in urban areas are still exposed to "body image". Breast itself is apart from the reproductive organs is also a sexual organ (Idris, 2016). Reference by Roesli, 2005 explain that loss of knowledge about breastfeeding mean serious loss of mother’s confidence a mother to be able to provide the best care for the baby and the
baby will lose a vital source of food and way of optimal care.

From the level of attitude theory, can be seen that the level of respondent’s attitude in this study is at a level to receive and respond. Respondents want and pay attention to the information offered by midwives about exclusive breastfeeding and also can gave answers to questions about that exclusive breastfeeding material. It shows a mother’s readiness to act in exclusive breastfeeding as well as strengthening the determinants of mothers in performing her actions later (Notoadmodjo, 2005).

From the statistical test by using Fisher's exact test was obtained a significant relationship between Midwives Persuasive Communication Towards Mother’s Attitude in Giving Exclusive Breastfeeding in Puskesmas Sudiang. This means that the midwife with persuasive communication can contribute to the formation of mother’s positive attitudes towards Exclusive breastfeeding. Mother was receiving quite a lot of persuasive form of communication that provide by midwife. It is felt by the mother in some ways. She felt confident and believe it will provide a variety of information about Exclusive breastfeeding by midwife.

In addition, most mothers feel comfortable with the way the midwife communication of such information. Feel confident and comfortable are the things of emotions. In doing persuasive communication in order to change the attitude, then what is needed is an affective or emotional approach (De Vito & Joseph, 2011). According to De Vito, when persuasion messages conveyed, the message will reach and affect the emotional aspects of the individual to be targeted persuasion. Pavlov in the principles of classical or respondent conditioning suggested that a person will be positive about the objects that are often presented in conjunction with the positive stimulus, vice versa, someone will be give negative attitude towards objects that were presented along with the negative stimulus. The principle relates to the process of affective when someone receiving messages.

Attitudes gained through experience will cause a direct influence on behavior. In line with the theory of S-O-R, the stimulus that comes to different people will produce different responses. This is due to many factors that affect a person for example characteristics, socio-cultural, economic, environmental and other factors. In this study, the stimulus in the form of midwife persuasive communication about breastfeeding, happens to most mothers who had Characteristics that contribute to positive change of attitude. Among them are the age group, mother's education, work and experience, which we describe below. Various factors that influence the formation of attitudes are internal and external factors. Internal factors include sex, age, education and experience. External factors include the mass media, educational institutions, religious, community, facilities and work environment (Azwar, 1997).

From this theories we can analyze how the mother's attitude in relation to the characteristics of them. From the data of the characteristics of the data showed that most respondents Age as many as the age group 20-29 years. According to Huclok (1998) if getting enough age, level of maturity and strength by person will be more mature in thinking and working. In terms of public trust someone more mature more trusted than people who have not quite grown or immature. It will be part of the experience and maturity of the soul. For educational characteristics are dominated by education level of mothers with a high school graduation. This allows the mother to get well and digest information in implementing healthy living one of which is the provision of
exclusive breastfeeding presented with persuasive approach by midwives.

In addition, most of respondents are house-wife. This condition provides a great opportunity for mothers to be more accepting and preparing for giving exclusive breastfeeding to their babies later. In addition to age and education, as internal factors that can affect the attitude is experience. Mother's experience in this respect can be seen from the gravid data or gestation period. In this research, the category of the most gravid was 2-3. Women with more than one ravid has had experience in childbirth and breastfeeding so as to contribute positively to their position in the exclusive breastfeeding. In contrast to women with first-time pregnant has no experience in breastfeeding and seen from the results of research that shows that the average gravid <2 has a negative attitude.

This study is in line with research conducted by Erli (2014) which suggests that the role of midwives has a strong and significant correlation with the attitude in the implementation of exclusive breastfeeding. Mothers who receive information from health officials will have the attitude that is more prepared to breastfeed. However, in contrast to research by Cut Alia (2012) who obtained that there is no relationship between the midwife persuasive communications with attitude due to positive mother’s statements with persuasive communication midwife but the response before acting or the attitude of many mothers were classified as negative.

**CONCLUSION**

The relationship between the midwives’ persuasive communication in the mother's attitude was supported by exclusive breastfeeding among mother’s characteristics were age adults (20-29 years), work as a housewife and mother's experience in this ever give birth (gravid 2-3). Based on the result, suggestion including: 1) midwives need to use audiovisual media so that it can more easily approach, influence, and motivate mothers to provide information about exclusive breastfeeding; and 2) it should be further research on the relationship with the midwife persuasive communication actions in exclusive breastfeeding mothers.

**REFERENCE**


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THE ROLE OF PERCEIVED BEHAVIORAL CONTROL FOR DEVELOPMENT PATIENT SAFETY CULTURE

Mirrah Samiyah*; Widodo J Pudjirahardjo; Thinni Nurul R

Doctoral Student, Faculty of Public Health, Airlangga University
Email: mirrahsamiyah@gmail.com

ABSTRACT

The goal of hospital patient safety was to prevent injuries caused by errors due to poor action performance or inability to take it. Surabaya Oncology Hospital (RSOS) was one of the specialty hospitals that provide the integrated services in the case of breast, gynecology, thyroid, as well as general oncology, and chemotherapy center. This was descriptive research with a cross sectional approach. The research was conducted in Surabaya Oncology Hospital. Data was taken from October 2011 to May 2012. Analytical unit was the working units in Surabaya Oncology Hospital. Respondents were all 23 working units in Surabaya Oncology Hospital. Variable studied was measured using questionnaire and check-list sheet.

The results showed that the patient safety policy indicated most employee unsupportive (26.1%) to the implementation of patient safety program in the hospital. The patient safety culture indicates most employees supportive (91.3%) over implementation of patient safety program in the hospital. Patient safety’s standard operational procedure indicate most employees supportive (78.3%) over implementation of patient safety program in the hospital. Existence of KKPRS in the hospital was not supportive (30.4%) over implementation of patient safety program in the hospital. Working unit readiness in implementation of patient safety program based on standard six goals of International Patient Safety is in partially met category (5<10). It means that there were still actions that should be improved for patient safety program development based on six goal international patient safety.

In conclusion, the perceived behavioral control of employee in working unit level on safety patient policy indicated most employee unsupportive implementation of Safety patient program in the hospital. Working unit readiness in implementation of safety patient program based on the standard six goals of International Patient Safety is in partially met category.

Keywords: Six Goal International Patient Safety, Perceived Behavioral Control

INTRODUCTION

Hospital patient safety goal is to prevent injuries caused by errors due to performance an action or failure to taking it. Surabaya Oncology Hospital (RSOS) is one of specialty hospitals that provide integrated services in breast, thyroid, gynecology, general oncology cases, and Chemotherapy center. The organization of RSOS Patient Safety Committee had existed since 2006.

Table 1. Distribution of Incident Type Base on Case Type

<table>
<thead>
<tr>
<th>No</th>
<th>Incident Type</th>
<th>Case Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AE</td>
<td>NS</td>
</tr>
<tr>
<td>1</td>
<td>Phlebitis (1.5%)</td>
<td>33</td>
</tr>
<tr>
<td>2</td>
<td>Incomplete inform consent</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Incomplete medical rec</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Image retaking</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Chemotherapy schedule mistake</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>396</td>
</tr>
</tbody>
</table>

Source: Report of Quality Department, Surabaya Oncology Hospital, October 2011
Table 1 indicated that there were 33 adverse events (AE) and 396 near missed cases (NS) in Surabaya Oncology Hospital. Of total 429 incidents from January to July 2011, they mostly consisted of incomplete inform consent (57.1%) and incomplete medical record (21.4%). Problem discussed in this research is still existence of patient safety incident in Surabaya Oncology Hospital from January to July 2011 as of 429 incidents.

**MATERIAL & METHOD**

It was descriptive research with a cross sectional approach. The research was conducted in Surabaya Oncology Hospital. Data was taken from October 2011 to May 2012. The analytical unit was the working units in Surabaya Oncology Hospital. Respondents were all 23 working units in Surabaya Oncology Hospital. Variable studied was measured using questionnaire and check-list sheet.

**RESULT**

Perceived behavioral control (PBC) of employee in working unit level on policy, patient safety culture, patient safety standard operational Procedure and existence of KKPRS in Surabaya Oncology Hospital is presented in table 2 below. Table 2 informs that most employees (65.2%) supported patient safety policy in the hospital. However, perceived behavioral control of employee in working unit on policy was a strategic issue because there were 26.1% working unit indicating unsupportive employee over patient safety policy. In addition, most employee in the working unit level support patient safety culture in the hospital in which 91.3% working unit having PBC supporting patient safety culture.

PBC of employee in working unit on patient safety SOP in the hospital was supportive (78.3%). It means, working unit evaluation on patient safety standard operational procedure was supportive on patient safety program implementation. In general employee PBC was supportive over existence of KKPRS. Existence of KKPRS was a strategic issue because there were 30.4% working unit stating that the existence of KKPRS was not supportive over implementation of patient safety program.

Intention of employee at working unit level in patient safety program in Surabaya Oncology Hospital was presented in table 2. Based on information presented in table 3, most employees (52.2%) in working unit level have good intention in patient safety program implementation. The good intention from most working units was capital for Surabaya Oncology Hospital to improve the patient safety program.

Table 2. Distribution of Employee PBC in Working Unit Level on Patient Safety Policy, Culture, and SOP, and Existence of KKPRS in Surabaya Oncology Hospital, April 2012

<table>
<thead>
<tr>
<th>No</th>
<th>perceived behavioral control</th>
<th>very unsupportive</th>
<th>Unsupportive</th>
<th>supportive</th>
<th>very supportive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>patient safety policy</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>26.1</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>patient safety culture</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>8.7</td>
<td>21</td>
</tr>
<tr>
<td>3</td>
<td>patient safety SOP</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4.3</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>existence of KKPRS</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>30.4</td>
<td>16</td>
</tr>
</tbody>
</table>
Table 3. Intention of employee at working unit level in patient safety program in Surabaya Oncology Hospital, April 2012

<table>
<thead>
<tr>
<th>No</th>
<th>Intention</th>
<th>Freq</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very bad</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Bad</td>
<td>1</td>
<td>4.3</td>
</tr>
<tr>
<td>3</td>
<td>Good</td>
<td>12</td>
<td>52.2</td>
</tr>
<tr>
<td>4</td>
<td>Very good</td>
<td>10</td>
<td>43.5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>23</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Readiness of working unit in patient safety program implementation based on six goals of international patient safety in Surabaya Oncology Hospital was presented in following table.

Table 4. Readiness of working unit in patient safety program implementation based on six goal international patient safety in Surabaya Oncology Hospital April 2012

<table>
<thead>
<tr>
<th>Category</th>
<th>working unit amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>not met</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>partially met</td>
<td>23</td>
<td>100.0</td>
</tr>
<tr>
<td>fully met</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Notes: scoring scale

a. 0 - <5 Not Met
b. 5 - <10 Partial Met
c. 10= Fully Met

Table 4 shows that all working unit was in partially met category. It means there were still actions that should be improved for patient safety program development based on six goal international patient safety. Table 5 contain the summary of working unit readiness (based on priority of scale) in patient safety program implementation based on six goal international patient safety in Surabaya Oncology Hospital in each target.

Table 5. Score of working unit target in patient safety program implementation based on six goal international patient safety in Surabaya Oncology Hospital in each target, April 2012

<table>
<thead>
<tr>
<th>No</th>
<th>Target</th>
<th>score 0</th>
<th>score &gt;0 &lt; maximal score</th>
<th>maximal score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>1</td>
<td>Target 1</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>Target 2</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>Target 3</td>
<td>3</td>
<td>13.0</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Target 4</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>Target 5</td>
<td>2</td>
<td>8.7</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>Target 6</td>
<td>4</td>
<td>17.4</td>
<td>12</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The results showed that perceived behavioral control at the unit on the implementation of patient safety in the RSOS program were as follows: (a) perceived behavioral control employee at unit of patient safety policy were the most unfavorable (b) perceived behavioral control of employees in the unit on patient safety culture in the RSOS were mostly good; (c) perceived behavioral control employee at unit of patient safety standard operating procedures in the RSOS were mostly good; (d) perceived behavioral control employee at unit of the existence of the patient safety committees RSOS was not good.

The intention of employees in the unit in the implementation of patient safety program in the RSOS were mostly good, the readiness of employees at the unit level RSOS work in patient safety program implementation based on six goal international patient safety standard from Joint Commission International (JCI) all work units in RSOS were still in the category of partial met. The recommendation development program based on six goal international patient safety standard in the RSOS were as follows: (a) the socialization of the patient
safety program was more technical to executive level, as assessed socialization policy still at management level (b) emphasize the importance of patient safety program implementation, so that they were not only perform a procedure as a liability but also as the need for patient safety, (c) Immediately restructured KKPRS organization in the RSOS.

Chairman KKPRS did not have an anesthetist, (d) provide rewards and punishments in a patient safety program; (e) make a good documentation system on patient safety program in the RSOS in the form of a checklist to facilitate implementation in the field; (f) the recommendations in each target: Goal 6: to make the team weeks to prevent patient safety, making the patient fall risk assessment system, Goal 3: need for surveillance monitoring of drugs that high risk, especially for the placement of drugs at high risk, the evaluation for the identification label executive in the field. Goal 5: to evaluate and monitor the implementation of hand hygiene program in the field, evaluation of the obstacles encountered in preventing the danger of nosocomial infection. Goal 4: The need for checklist of equipment in space to prepare surgery, to avoid errors and omissions officer instrument. Goal 1: evaluation and monitoring the implementation of patient identification in the field of compliance and accuracy grows in the identification of patients with appropriate and correct use of two different identifiers.

Training on how to communicate between officers in each unit of work, especially in the household unit. There are several recommendation to considered: 1) identify policies RSOS about patient safety program based on six international patient safety goals; 2) shape the behavior of employees in the unit at the RSOS in the implementation of patient safety program based on international standards of six patient safety goals; 3) evaluate and make SOP as a guide to support the development of patient safety program based on six international patient safety goals; 4) evaluate the behavior of employees in performing patient safety program based on six international patient safety goals; and 5) support infrastructure in the development of patient safety program based on six international patient safety goals

**CONCLUSIONS**

Perceived behavioral control of employee in working unit level on patient safety policy indicated most employee unsupportive to the implementation of patient safety program in the hospital. Patient safety culture indicate most employees supportive over implementation of patient safety program in the hospital. Safety patient standard operational procedure indicate most employees supportive over implementation of Safety patient program in the hospital.

The existence of KKPRS in the hospital was not supportive over implementation of patient safety program in the hospital. The intention of most employees in working unit level in patient safety program implementation in the hospital was good. The working unit readiness in implementation of safety patient program based on standard six goal of International Patient Safety was in partially met category.

Development of patient safety culture based on perceived behavioral control in the RSOS were as follows: 1) the socialization of the patient safety program was more technical to executive level, as assessed socialization policy still at management level; 2) emphasize the importance of patient safety program implementation, so that they were not only perform a procedure as a liability but also as the need for patient safety; 3) immediately restructured patient safety committee the RSOS; 4) provide rewards
in a patient safety program; 5) make a good documentation system on patient safety program in the RSOS in the form of a checklist to facilitate implementation in the field; 6) RSOS policies regarding patient safety should base on six international patient safety goals; 7) shape the behavior of employees in the unit at the RSOS in the implementation of patient safety program based on international standards of six patient safety goals; 8) evaluating and making standard operational procedures as a guide to support the development of patient safety program based on six international patient safety goals; 9) evaluation of the behavior of employees in performing patient safety program based on six international patient safety goals; and 10) supporting infrastructure in the development of patient safety program based on six international patient safety goals.

COMPETING INTERESTS

The authors declare that we have no competing interests.

REFERENCES


ABSTRACT

Making of situational to the suffering/illness can cause distress, the situational meaning resulting from the process of perceiving. The formation of a perception in the thinking system can be influenced by the mindset (value, belief, rule). The purpose of this research is to explain the effect of the ritual healing intervention to mindset, perception response and distress levels. Explaining the relationship strengthening of mindset to response of perception and level of distress.

The study was conducted in the Bancing village, Paramasan Banjar district of South Kalimantan. This was a pre-experimental design study with one group pre-post test. Subjects were seven people who had complaints of respiratory disorders. The research instrument used was questionnaire asking about: value, belief, rule, response of perception and distress level. Data analysis technique used in this study was paired sample t test.

There were differences in the pre-post belief, rule, value variables (sig.0.000<0.05). There were differences in the pre-post response of perception and distress level variables (sig.0.000<0.05). Pearson correlation test showed that, there was a significant relationship (p<0.05) between the changes Mindset (value, belief, rule) to change the perception variables. The relationship indicated by the value of the coefficient value (r=0.849), belief (r=0.888) and the rule (r=0.916). There was a significant relationship (p<0.05) between the changes Mindset (value, belief, rule) with variable changes distress. The relationship indicated by the value of the coefficient value (r=-0.991); belief (r=-0.991); rule (r=-0.991).

It can concluded that intervention of ritual used in practice Ethnomedisin in Dayak Paramasan Meratus could improve the mindset aspects; increase response of perception and decrease levels of distress in patients with respiratory tract illness. Strengthening of ones mindset would influence to increase response of perception and decrease level of distress.

INTRODUCTION

Dayak Paramasan ethnic have ethnome-dicine as a form of recovery effort from illnesses. For the Dayak Paramasan, the treatment systems using herbs and rituals are still very effective and safe to treat their illness. Management of infectious disease by conventional medicine, needs care and curative measures using a variety of appropriate antibiotics was still limited. With regard to the above phenomenon, until now the use of herbs and rituals baharagu to treat a variety of infections, including respiratory disorders has not been elucidated.

Ritual baharagu as a healing component of ethnomedicine dayak Paramasan is not just a mere cultural accessories, but rather the meaning and symbols contained in it has philosophical value rooted deep into theirselves every member of the Dayak paramasan ethnic communities. Values and beliefs called the Mindset it has been installed into their belief-system. The crystallization of
mindset can guide the thinking system in producing a perception which can further deduce their attitude and behavior (Anshari and Utami, 2016). Meaning Making model explains that there are two levels of meaning: Global Meaning and Situational Meaning (Park and Folkman, 1997, Park 2013). If perception (situational meaning) to a stressor is not congruent with the Mindset (global meaning) it will create distress (Park, 2010).

This research was carried out on cases of respiratory disorders (illness). Description of the public to respiratory disorders are not specific: associated with symptoms of cough, shortness of breath, pain in the chest or around the airway, usually accompanied by other symptoms such as malaise, weakness, sputum, general symptoms are felt to be prolonged (chronic). The purpose of this study was going to explain the effect of ritual intervention to mindset, perception response and distress levels. Explaining how relationship on the changes of mindset to perception response and level of distress.

MATERIAL & METHOD

This was a quantitative research with pre-experimental pre-post test one group design. Subjects to be treated was set based on inclusion criteria which was patients already suffered from respiratory problems for more than three weeks. Patients showed worsening conditions. Each of the study subjects were given early treatment for 3 days with herbs, if not contained healing on the 3rd conducted pre data collection (at noon) further implementing baharagu ritual (at night). Post ritual baharagu subjects experienced periods of abstinence for 2 days and 1 night. Post data capture was done 1 day after periods of abstinence is completed. If the data retrieval post subject of research has not shown the progress/change then do repitisi ritual baharagu in the evening next.

Research conducted from January through September 2015, the study subjects who participated were 7 people. The research variables were belief, rule, value, perception, distress. After implemented normality test, paired t test was carried out to determine differences in the variables before and after treatment. Test of relationship with bivariate analysis was employed using Pearson correlation method. Test of multivariate analysis was conducted using multiple linear regression to see the relationship between variables.

RESULT

The results of t test analysis of the variables: value, belief and rule showed a significant difference (p<0.05) between before and after treatment ritual. The frequency distribution of each variable indicator showed the average positive change (improvement). Variable value turned positive (lower categories from 28.6% to 0% and higher categories from 0% to 42.9%). Variable belief turned positive (lower category eventually become 0% and higher categories of the original 0% to 42.9%). Variable rule turned positive (lower category eventually become 0% and higher categories from 0% to 28.6%).

The results of t test analysis the overall indicator variable distress (p<0.05) showed significant difference between before to after the intervention. The frequency distribution of each variable indicator of distress showed the average change in the negative (decrease). A decrease in distress level after treatment ritual was indicated by high distress category before the intervention ritual: 42.9% to 0% after treatment. The results of t test analysis overall perception indicator variables (p<0.05) showed significant difference between before to after the intervention. The frequency
distribution of each variable indicator of perception showed the average change in the positive (increases). Improved perception after treatment indicated category high perception from 0% to 42.9% and a low perception category from 14.3% to 0% after treatment.

Pearson correlation test showed that there was a significant relationship (p<0.05) between the changes Mindset (value, belief, rule) to change the perception variables. The relationship indicated by the value of the coefficient value (r=0.849), belief (r=0.888) and the rule (r=0.916). There was a significant relationship (p<0.05) between the changes Mindset (value, belief, rule) with variable changes distress. The relationship indicated by the value of the coefficient value (r=-0.991); belief (r=-0.991); rule (r=-0.991).

DISCUSSION

From the data results indicate that intervention baharagu ritual can cause a significant change between before and after treatment in the belief, rule and value variables. Belief, value and rule variables are a component of mindset. It can be said that the ritual intervention baharagu can cause significant change in mindset with the quality of positive change (improvement).

Intervention baharagu ritual also shows a significant change between before and after treatment on the perception response and level of distress variable. It can be said that the change in mindset component (independent) to encourage a significant shift in the variable defendant (perception and distress).

Mindset relate strongly and showed a negative direction to variable distress. This indicates that the strengthening Mindest lead to lower levels of distress. Mindset is strongly correlated with positive direction towards the perception variables. This shows that Mindset strengthening responses resulted in increased positive perception.

Data results indicate that ritual baharagu have the ability to intervene in mindset (belief, rule, value) with the collective belief that there was a strengthening mindset. Which is the dominant mindset can induce the perception system to establish the stress perception with quality corresponding to mindset perspective. These events cause the coping process further through the HPA axis, the body responds in the form of suitable quality (congruent) Anyway, that support the healing effort.

CONCLUSION

Intervention baharagu rituals of ethnomedicine Dayak Paramasan could improve Mindset aspects; increased perception response and lowered levels of distress from patients with respiratory tract illness. Strengthening Mindset have a strong influence on the increase perception response and decrease in level of distress.

REFERENCES


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FAMILY CENTERED CARE APPROACH AS AN EFFORT IN DECREASING HOSPITALIZATION STRESS ON PRESCHOOL CHILDREN (3-6 YEARS)”
(A STUDY IN IRNA E ROOM OF RSUD SYAMRABU BANGKALAN)

M. Suhron

Email: dsuhron@yahoo.co.id

ABSTRACT

Hospitalization is a planning process or an emergency that necessitates children to be hospitalized. Usually, children will be given a therapy and treatment to treat their illness. The purpose of this study was to find out the differences of hospitalization stress on children age 3-6 years old before and after they have been given family centered care approach.

The design of this study was a quasi-experiment and the model used was one group pre-test post-test, stress during hospitalization as variables. The research populations were 22 children, with 15 children were randomly drawn as samples. This study used a consecutive sampling technique. Data was analyzed using T-Test.

The result of this study showed that before the treatment using family-centered care nursing approach 11 children (73,33%) were depressed/very stress. Meanwhile, after they had been treated 14 children (93,33%) suffered from light stress. Based on the result by using T-Test, the P-value was 0,000<α : 0,05. There was a difference between state of stress before and after the treatments using family centered care approach during hospitalization.

The researcher suggests the nurses should use the family centered care approach on the patients in IRNA E room of Syamrabu Bangkalan.

Keywords: Family Centered Care, Preschool Children, Hospitalization Stress

INTRODUCTION

Hospitalization is a process for a reason that is planned or an emergency requiring the child to stay in the hospital for therapy and care until their return back home. During the process, children and parents can experience a variety of events which, according to some studies indicated with a very traumatic experience stressful (Supartini, 2004). Hospitalization done when children were in a period of growth and development could lead to mental and physical disorder when they receive treatment at the hospital. In the child’s nursing practice, the nursing care applied is based on the philosophy of the nursing child. The philosophy of nursing a child is a belief or view held by the nurses to provide services to the children. One of the form is the family centered care (care that focuses on the family). Family centered care emphasizes the importance of parental involvement in providing care for children in the hospital.

Based on WHO data obtained in 2007-2008 preschool patients hospitalized in an American International experience stressed 13% of the children. According to research in Indonesia, 35% of all pediatric patients in hospitals experiencing the impact of hospitalization in the form of depression (Kuswandar, 2010). In RSU Dr. Soetomo, 55% of respondents experienced the stress of hospitalization (Health East Java, 2010). Nursery as a place of child care is expected to provide a sense of security and not intimidating for
children. But the reality is far from what is expected.

Based on the results of preliminary study data, regardless of the diagnosis of major diseases of children conducted by researchers at the date of October 30, 2014 in room E Irna Syarifah Ambami Rato Ebu hospitals Bangkalan, 10 preschool children (3-6 years) with duration of treatment of 1-7 day showed that 2 children experienced the stress of hospitalization lightly marked with the child refusal to eat, 3 children experienced the stress of hospitalization were indicated by the child cries, refusal to be left alone, five children experienced the stress of hospitalization weight manifested by children were always whining, less active, crying, upset, and often angry without a cause, the child cannot to be left to the mother even if only briefly. From the preliminary data, it was concluded that there was high incidence of hospitalization stress among preschoolers treated in Irna E Syarifah Ambami Rato Ebu hospitals Bangkalan.

Lack of awareness of nurses in nursing care to family centered care will affect children's fear and anxiety and children might have nightmares. So that the child loses the functions and controls in respect of motor function resulting in reduced confidence. Hence, the task progress that has been achieved can be inhibited. This makes children become regression; bedwetting, like to suck their fingers and refusing to eat. Kids tend to have restraints that can cause anxiety so that the children feel uncomfortable going to change that happened to them (Wong, 2008).

Seeing the importance of the role of the family in dealing with the stress of hospitalization in children, the nurse must have a good awareness by providing a family approach to the important role of the family to cope with the stress of hospitalization for children to accelerate the healing process in children. Based on the above background, the researchers want to find out more about the differences in approach to family centered care nursing care to preschoolers (3-6 years) who experienced the stress of hospitalization before and after nursing care approach to family centered care in hospitals Syarifah Ambami Rato Ebu Bangkalan.

The researchers limit the differences in levels of the stress of hospitalization of children of preschool age (3-6 years) before and after nursing care approach family centered care in space Irna E Syarifah Ambami Rato Ebu hospitals Bangkalan. The research question was whether there was differences in the level of stress of hospitalization among children of school age (3-6 years) before and after the implementation of the family centered care in Irna E Syarifah Ambami Rato Ebu hospitals Bangkalan? The final goal of this study was to determine differences in the level of stress of hospitalization in school age children (6-13 years old) before and after the family-centered approach intervention.

**MATERIAL & METHOD**

This study used the quasi-experimental design (design one group pretest-post test) without control group. The independent variable in this study was the family centered care while the dependent variable in this study was the stress of hospitalization. In this study the population used were all children of school age (3 to 6 years) treated in the Irna E Syarifah Ambami Rato Ebu hospitals Bangkalan. Average number of children of school age patients who were treated in the past month is 22 children. The number of samples in this study was 15 respondens. The sampling technique used in this study was Consecutive Sampling.

The experiment was conducted at room place of the Irna E Syarifah Ambami Rato Ebu hospitals Bangkalan. It conducted between January through
February 2015. The data collection method used in this study was an observation model with check list sheet. Paired t-test was used to analyze the difference between two dependent variables before and after treatment with a significance level of 0.05 to the scale of the data used which was ordinal.

RESULT

From table 1 it can be seen that the age distribution of children admitted in room Irna E Syarifah Ambami Rato Ebu Hospitals Bangkalan mostly (66.7%) aged 3 years old.

Table 1. Characteristics of Respondents by Age of Children Treated in Irna E Syarifah Ambami Rato Ebu Hospitals Bangkalan

<table>
<thead>
<tr>
<th>No</th>
<th>Age (Years)</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>f</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

Based on table 2 it can be seen that the gender distribution of children admitted in Irna E Syarifah Ambami Rato Ebu hospitals Bangkalan were mostly male (53.3%).

Table 2. Characteristics of Respondents by Gender Children Treated in Irna E Syarifah Ambami Rato Ebu Hospitals Bangkalan

<table>
<thead>
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</tr>
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<tbody>
<tr>
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<td></td>
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</tr>
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<td>1</td>
<td>Male</td>
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</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

Table 3. Characteristics of Respondents Based Diagnosis in Children Treated Irna E Syarifah Ambami Rato Ebu Hospitals Bangkalan

<table>
<thead>
<tr>
<th>No</th>
<th>Diagnosis</th>
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</tr>
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<td>4</td>
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<tr>
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</tbody>
</table>

From table 3, it can be seen that the distribution of diagnoses for children treated diruang Irna E Syarifah Ambami Rato Ebu Hospitals Bangkalan more than 50% of diagnoses Obs. Febris.

Table 4. Stress before Hospitalization Kids Awarded Family Centered Approach Nursing Care in Irna E Syarifah Ambami Rato Ebu Hospitals Bangkalan

<table>
<thead>
<tr>
<th>Res</th>
<th>Before Given approach nursing family centered care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Skor</td>
</tr>
<tr>
<td>1</td>
<td>32</td>
</tr>
<tr>
<td>2</td>
<td>34</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>35</td>
</tr>
<tr>
<td>5</td>
<td>31</td>
</tr>
<tr>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>7</td>
<td>32</td>
</tr>
<tr>
<td>8</td>
<td>34</td>
</tr>
<tr>
<td>9</td>
<td>33</td>
</tr>
<tr>
<td>10</td>
<td>32</td>
</tr>
<tr>
<td>11</td>
<td>29</td>
</tr>
<tr>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>13</td>
<td>39</td>
</tr>
<tr>
<td>14</td>
<td>30</td>
</tr>
<tr>
<td>15</td>
<td>31</td>
</tr>
</tbody>
</table>

Mean : 32.53
Maximum : 39
Minimum : 29
Std. Deviation : 2.696

Uji T p=0.000; α=0.05
Table 5. Hospitalization stress after Family Centered Care Intervention in Irna E RSUD Syarifah Ambami Rato Ebu

<table>
<thead>
<tr>
<th>Res</th>
<th>Skor</th>
<th>P</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>2</td>
<td>18</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>3</td>
<td>17</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>4</td>
<td>14</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>5</td>
<td>14</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>6</td>
<td>13</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>7</td>
<td>18</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>8</td>
<td>19</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>9</td>
<td>17</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>10</td>
<td>15</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>11</td>
<td>20</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>12</td>
<td>18</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>13</td>
<td>18</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>14</td>
<td>18</td>
<td></td>
<td>undemanding</td>
</tr>
<tr>
<td>15</td>
<td>21</td>
<td></td>
<td>Middle</td>
</tr>
</tbody>
</table>

Mean : 17.27  Maximum : 21  Minimum : 13  Std. Deviation : 2.658

Uji T = 0.000; α=0.05

**DISCUSSION**

Results of research conducted on 15 children showed that the stress of hospitalization of children before being given the Family Centered Care approach in the room of Irna E Syarifah Ambami Rato Ebu hospitals Bangkalan were mostly experiencing Severe stress (73.33%). This was demonstrated by the child's reaction to stress of hospitalization by the number of respondents 15 children. 15 children never want to cooperate with the nurse when they performed nursing actions such as infusion, injection and blood sample with the percentage (100%), 15 children were never carried out activities that he liked during the hospital with a percentage (100%), and 12 children looking for parents when parents did not accompany the children (80%)

The above results are supported by theory Supartini (2004) that during the preschool child's reaction to the stress of hospitalization is not willing to cooperate with the nurses, angry, activity limitation, uncooperative toward action, refusing to eat, often asking and crying.

Results of research conducted on 15 children showed that the stress of hospitalization after the child was given the family centered care approach in Irna E Syarifah Ambami Rato Ebu hospitals Bangkalan showed that the majority of respondents had experienced undemanding stress as many as 14 children (93.33%). Only one child experience middle stress (6.67%). The majority of children after the given approach to family centered care nursing experienced undemanding stress. The child's reaction to the stress of hospitalization were decreased where 11 children never encourage current nurses to do nursing actions such as infusion, injection and blood sampling (73.33%), seven children have never experienced sleeplessness by percentage (46.67 %), and 6 children never skip meal (40%).

One of the benefits of family centered care is where care givers concerned and involved the important role of the family, family support will build strength, helping to make the best choice, and increase the normal patterns that exist in daily life for sick children and undergo healing (Johnson, 1992 cited in Fiane, 2012). So it can be seen that the provision of nursing care approach to family centered care that is given for 3 times during 1x24 hours can reduce stress hospitalization to the preschoolers

Data obtained from the study before the given approach to family centered care found that most children who experience Severe stress (73.33%), after the shift to family centered care the majority of children who undemanding experience stress experienced by 14 children (93.33%). On average there are differences in stress reduction in hospitalization between before and after nursing care approach to family centered care to children aged 3-6 years in space
Based on the test results of T test Statistics data analysis shows the results of p value=0.000<α=0.05, which means that H0 rejected H1 accepted. This shows that there were differences in the stress of hospitalization of children before and after approach to nursing care family centered care in preschool children with an average of anxiety before the approach of nursing care family centered care that was 32.53 and after approach to nursing care family centered care that was 17.27 in Irna space E Syarifah Ambami Rato Ebu hospitals Bangkalan.

This is consistent with the theory of Supartini (2004) that the child nursing practice, nursing care that is applied is based on the philosophy of the nursing child. The philosophy of nursing a child is a belief or view held by nurses’ weeks to provide services to children. One is family centered care (care that focuses on the family). Family centered care emphasizes the importance of parental involvement in providing care for children in hospital. This is consistent with the theory of Nancy (2008), Family centered care is aimed at maintaining the role of families and carers in caring for the child at the hospital to reduce anxiety and sense of judgment when the child knows her illness. Families can perform its function as a coping for children in shaping and maintaining the event of stress (Friedman, 2008). Reduce stressors can also have an impact on the parents or the client's family due to fear, anxiety and frustration of the seriousness of the disease suffered by family members (Andika, 2012).

CONCLUSION

The conclusion of this study as follow: 1) most of the stress level of hospitalized preschool children (3-6 years old) in Syarifah Ambami Rato Ebu hospitals Bangkalan before being given a family centered care approach was a Severe stress; 2) the majority of the stress of hospitalization preschoolers (3-6tahun) in Syarifah Ambami Rato Ebu Hospitals Bangkalan given after family centered care approach to children was stressful undemanding; and 3) there was a difference in the level of stress of hospitalization of children of preschool age (3-6 years) before and after family centered care approach to children in hospitals Syarifah Ambami Rato Ebu Bangkalan.

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ABSTRACT

The prevalence of breast cancer in the world has increased and most of the case was diagnose to be in the advanced stage. The lack of knowledge make the adolescent girls’ willingness to detect the early occurrence of breast cancer symptoms were late. This cause by the absence of health education implemented of health workers at Dawar Muslim boarding school. The aim of this research was to analyze the effects of BSE education on knowledge, attitudes and practices of students at a muslim boarding school. Design of this research was a quasi experimental with non equivalent control group. The samples were 60 female santri. Paired t-test and wilcoxon test were used for statistical analysis in this research. The result showed that knowledge, attitudes and practices increased in the treatment group, and there were no differences in knowledge, attitudes and practices in control group. BSE education provided significant effect on knowledge and practice as well the attitude. The results showed that the eta squared for knowledge was 0.084, for attitude was 0.352 and for practice was 0.062.

Keywords: BSE education, Attitudes, Knowledge, Practice

INTRODUCTION

Cancer is one of the leading causes of death worldwide. In 2012, about 8.2 million deaths caused by cancer (Kemenkes RI, 2015). WHO estimates that the incidence of cancer will increase to 15 million new cases in 2020 with the number 458 000 deaths per year (Asthon et al., 2009).

GLOBOCAN (IARC), an agency of WHO’s cancer research in 2013, states that breast cancer has the highest percentage of new cases among all cancers. Number of breast cancer increased by 1.7 million from the previous 6.3 million women who have been diagnosed with breast cancer living in the last 5 years. Breast cancer is the most common cause of death in women attributed to 522,000 deaths (WHO, 2013).

The Basic health Research and Development Agency Ministry of Health and Population Data Target, estimates the number of breast cancer are the highest in the Central Java province from 34 other provinces in Indonesia. Central Java Province occupies first with the estimated absolute number of 11,511 patients and 0.7‰ physician diagnosis of breast cancer (Kemenkes RI, 2015).

Boyolali District Health Office in 2013, found 75 cases of breast cancer in Boyolali. The incidence of breast cancer in Boyolali was increasing every year. Most women with breast cancer were detected in an advanced stage hence they did not
get the maximum handling (Dinas Kesehatan Kab. Boyolali, 2013).

WHO said that if a person diagnosed with early breast cancer, they will certainly needing an immediate action to prevent the spread of malignant cells to other parts of the body so that the death rate from breast cancer can be decreased. WHO mention that with the early detection of cancer, the effectiveness in reducing the numbers deaths from the disease and survival will be improved (WHO, 2005).

Preliminary studies conducted on female students at the boarding school of Dawar, showed that students never get health education, particularly regarding breast cancer. Health information was not received by the students at the boarding school. The purpose of this research was to provide health education on breast self-examination on knowledge, attitude and practice of students in boarding school of Dawar, Boyolali. Therefore the awareness of students to the threat of breast cancer might be increased.

**MATERIAL & METHODS**

This research was a quasi experimental design with an experimental non equivalent control group design. This research examined the changes in the knowledge, attitudes and actions based on the treatment of female students in the form of health education about BSE. The sample was total sampling. From 66 people, 6 people were expelled because they did not complete the activities. Of the 60 female students, they were divided into 2 groups I (treatment group) and group II (control group). The treatment group received pretest, and posttest about health education two times (one time after a week of education and after education). While the control group only performed pretest and posttest only.

**RESULT**

Table 1. Description of Knowledge Group I

<table>
<thead>
<tr>
<th>Knowledge Category</th>
<th>Pretest %</th>
<th>Posttest I %</th>
<th>Posttest II %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>26</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Moderate</td>
<td>3</td>
<td>12</td>
<td>40</td>
</tr>
<tr>
<td>Good</td>
<td>1</td>
<td>18</td>
<td>60</td>
</tr>
</tbody>
</table>

After getting the education intervention, student’s knowledge increased.

Table 2. Description of Attitude Group I

<table>
<thead>
<tr>
<th>Attitude Category</th>
<th>Pretest %</th>
<th>Posttest I %</th>
<th>Posttest II %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nosupport</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Support</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

In the pre test, post test I and II, there was no change in the attitude of students, all students supporting BSE.

Table 3. Description of Practice Group I

<table>
<thead>
<tr>
<th>Practice Category</th>
<th>Pretest %</th>
<th>Posttest I %</th>
<th>Posttest II %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>28</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Good</td>
<td>2</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

Only 6.67% of students who were able to practice BSE correctly during pretest. After the education, the posttest I and II, all students were able to practice breast self-examination correctly.

Table 4. Description of Knowledge Group II

<table>
<thead>
<tr>
<th>Knowledge Category</th>
<th>Pretest %</th>
<th>Posttest %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>28</td>
<td>27</td>
</tr>
<tr>
<td>Moderate</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Good</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

In the control group, on the pretest and posttest showed no significant change in the variable students knowledge about BSE. The majority of knowledge remained at poor category.

44
Table 5. Description of Attitude Group II

<table>
<thead>
<tr>
<th>Attitude Category</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>No support</td>
<td>1 3.33</td>
<td>1 3.33</td>
</tr>
<tr>
<td>Support</td>
<td>29 96.67</td>
<td>29 96.67</td>
</tr>
</tbody>
</table>

Based on the pretest and posttest, the majority of students have attitudes that support the existence of BSE.

Table 6. Description of Practice Group II

<table>
<thead>
<tr>
<th>Practice Category</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>No support</td>
<td>30 100</td>
<td>30 100</td>
</tr>
<tr>
<td>Support</td>
<td>0 0</td>
<td>0 0</td>
</tr>
</tbody>
</table>

Based on the pretest and posttest, the practice of students about BSE 100% in the poor category.

Table 7. Statistical Tests of Knowledge gaps female students

<table>
<thead>
<tr>
<th>Paired Samples Test</th>
<th>Paired Differences</th>
<th>T</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest – Posttest I</td>
<td>-9.644</td>
<td>29</td>
<td>0.0001</td>
<td></td>
</tr>
<tr>
<td>Posttest I – Posttest II</td>
<td>-0.135</td>
<td>29</td>
<td>0.893</td>
<td></td>
</tr>
<tr>
<td>Pretest – Posttest (control)</td>
<td>0.102</td>
<td>29</td>
<td>0.919</td>
<td></td>
</tr>
</tbody>
</table>

In paired samples test, based on the pre-test and post-test there was a difference between prior educational knowledge with BSE after their education.

Table 8. Statistical tests of Attitudes gaps female students

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>T</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest – Posttest I</td>
<td>-3.302</td>
<td>29</td>
<td>0.003</td>
</tr>
<tr>
<td>Posttest I – Posttest II</td>
<td>0.611</td>
<td>29</td>
<td>0.542</td>
</tr>
<tr>
<td>Pretest – Posttest (control)</td>
<td>-0.409</td>
<td>29</td>
<td>0.686</td>
</tr>
</tbody>
</table>

Only pretest-posttest 1 which show the differences between the attitude scores before education with education after BSE.

Table 9. Statistical test to Know the Differences before and after BSE

<table>
<thead>
<tr>
<th>Test Statistics^</th>
<th>Pretest – Posttest I</th>
<th>Posttest I – Posttest II</th>
<th>Pretest – Posttest (control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>-4.821^a</td>
<td>-2.294^c</td>
<td>0.000^c</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>0.0001</td>
<td>0.022</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Based on pretest and posttest 1 and posttest 2 showed the differences in the practice of students about BSE.

Table 10. Eta squared test results

<table>
<thead>
<tr>
<th>Eta</th>
<th>Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.290</td>
<td>0.084</td>
</tr>
<tr>
<td>0.593</td>
<td>0.352</td>
</tr>
<tr>
<td>0.250</td>
<td>0.062</td>
</tr>
</tbody>
</table>

Based on the magnitude of the effect proposed classification Pallant when > 0.06 and a sufficient effect ≥0.14 great effect. The results of the analysis in this research note the eta squared test knowledge of 0.084, which means the effect was quite large. The attitude of the students showed that the results eta squared of 0.352 which indicated a big effect. The practice of students obtained eta squared value of 0.062, which means the effect was quite large.

**DISCUSSION**

This study illustrates that to achieve behavior change toward healthy behavior in society is not easy. Facts prove that in developed countries despite many factors that hinder behavioral change due to inhibiting the form of infrastructure such as less supportive community healthy
behaviors (Mubarok et al., 2007). The purpose of health education to improve people's knowledge about BSE that would form positive attitudes that can be shown by the practice of BSE by the public. Notoatmodjo said the high level of knowledge tend to form positive attitudes reflected by behavior (Notoatmodjo, 2007).

Some studies suggest that education about breast cancer will increase awareness of early detection of breast cancer (Erbil et al., 2012; Nugraheni, 2010). Nugraheni’s research results showed that the level of knowledge of BSE among midwifery good student. The entire student gets a thorough knowledge about breast cancer so that the awareness for the early detection of breast cancer was also high.

Research by Dewi expressed counseling on BSE as early detection of breast cancer was an effective strategy to increase student knowledge about BSE. Laras also stated that health education was an effective way in increasing the value of knowledge of the young women about breast self-examination, especially if supported by proven effective method, namely lectures and demonstrations (Permatasari, 2013; Pratama, 2014).

This research conducted at the boarding school of Dawar Boyolali districts showed that basically students have a supportive stance towards the BSE information. Education in the treatment group showed that 100% of students were supportive towards the BSE. Dian stated that an increase in the attitude of the respondent after counseling could be regarded as a powerful impetus to practice or behavior (Saptaningrum, 2013).

Their supportive attitude made students respond well to the practice of the BSE. Notoatmodjo said, an attitude of support has not materialized in an action automatically. In doing an action, one required supporting factor or a condition that allowed, among other facilities and support factors are friends, family and other parties (Notoatmodjo, 2012).

Research showed that the counseling implemented was providing a significant influence on the increase of the BSE practice among female students. Aprilia research showed that there was significant change in the practice of the BSE among high school students of the Futuhiyyah High School, Demak after health education intervention with the lecture method (Hidayati, 2011).

Based on the eta squared test, health education intervention provides a large effect on the practice. First practice was a change in the behavior of an individual. It was not easy to rely on the commitment and support from the surrounding environment. This research showed that despite the very positive attitude of students towards the BSE it was not necessarily that the students could make the BSE as a healthy behavior. This was consistent with Ritha’s research, which said that an automatic attitude has not materialized in an act (overt behavior). Changes in attitude becomes a real acts provided with the necessary supporting factor or a condition that allowed. Such supports may include facilities, support (support) of other parties (Melanie, 2016).

**CONCLUSIONS**

The conclusion of this study were: 1) there was an increased knowledge, attitude and practice in the treatment group after the BSE education intervention; 2) there were differences in the knowledge, attitude and practice among the experiment groups. Whereas, the control group did not showed no significant differences; and 3) the effect size as shown in the eta squared was big enough on knowledge and practice, but not in the attitude.

It is suggested to the boarding school to provide some level of personal space for students to be able to perform
the BSE, as well as to revive the health posts boarding.

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THE DESCRIPTION OF CADRE PERFORMANCE IN REGISTRATION COMPLETENESS OF THE POSYANDU INFORMATION SYSTEM IN THE AREA ACTIVITY OF PUSKESMAS TARAWEANG IN PANGKEP REGENCY

A. Rizki Amelia, Asmina

Department of Health Administration and Policy
Faculty of Public Health, Indonesian Moslem University
Email: kikiarizkiamelia@yahoo.co.id

ABSTRACT

The Cadres of Posyandu still have many problems about their performance in registration system of PIS (Posyandu Information System). In consequence the information receive by the Posyandu will be uncompleted or unconsistent. The conditions programs of Puskesmas that affect its performance in the future. It is believed that the cause of problem the lack of knowledge and attitude from the cadress and limited supervision from Puskesmas. The goal of this research was to know this description of cadre’s performance in ensuring the completeness registration of the PIS.

This research was carried out in the area of Puskesmas taraweang of pangkep regency. The was a descriptive research involving 89 cadres with simple random sampling technique to draw samples from the population of posynadu cadres in using a Puskesmas Taraweang activity area. The data was collected using a question nair in checklist from and the presented by narration description form.

The results showed that most of the Posyandu cadres have lesser knowledge and a good way to support the registration completeness useful and a good way to support the registration completeness useful and a good way to support the registration completeness of the PIS. In conclusion the research revealed that even though the Posyandu cadres still had little knowledge about the PIS, they supported the PIS application and the supervison given by the application. It is suggested for the future researchers to test the results the level of relationship analysis, for the education institute they can use the results if the research to develop a comparative theory or a meta-analysis

Keywords: knowledge, attitude, supervision, performance, PIS

INTRODUCTION

POSYANDU that already exist in today's society was instrumental in supporting the development of maternal and child health. Posyandu Balita in each village had been going well and regularly performed once a month and the coaching is done by the health centers. The Posyandu that scattered in each urban village helps the community primarily related to maternal and child health (Promkes PKM, 2013).

Posyandu has a vital role in achieving the development of maternal and child health therefore it requires a reference for the health cadres to understand the problems and to develop activities that is appropriate and tailored to the needs of the targets. In addition, it also required a tool capable of providing appropriate information in due time about the management of Posyandu to meet these two requirements set of tools was developed by compiling the data land information related to the activities,
conditions and developments in each Posyandu. These tools are so-called the integrated health information system (Institution, 2014).

The Posyandu Information System (PIS) is the order of the various components of Posyandu activities that generate data and information on the services to the process of child development and basic health care of mothers and children which includes coverage of the program, achievement programs, continuity weighing, weighing results and community participation (Institution, 2014).

In the PIS implementation it is generally I done by the Posyandu cadres who are volunteer force recruited from, by and for the people in charge of helping the smooth running of the health services. The existence of cadres are often associated with routine service in Posyandu. The health cadres should be willing to work voluntarily, willingly, and able to the Posyandu, as well as willing and able to mobilize communities to implement and follow the activities of Posyandu (Ismawati et al., 2010).

The role of the health cadres is so significant to the smooth run of the integrated health information systems as an actor in this program that require the good performance of Posyandu, Posyandu performance will determine the success in achieving the goal of integrated health information system in Puskesmas. The lack completeness of the data and information obtained from the Posyandu cadres will lead to mismatches in the program to be made to the public and would make health services to the community not effective. Based on existing data in Puskesmas Taraweang the total number of health cadres in Puskesmas Taraweang 91 in 2014, and in 2015 amounted to 98 people and in 2016 increased to 115 people (PHC Data Taraweang, 2016). Based on preliminary data the information obtained from Taraweang health centre revealed that while the total cadres Posyandu in Puskesmas Taraweang was 115 not all cadres were active. For example in typical Posyandu there are 5 to 7 registered cadres but those who were active limited to only 2 to 4 cadres especially in SIP registration activities.

The results of a preliminary study conducted in 10 Posyandu in Puskesmas Taraweang showed that the completeness of recording at each register was not optimal. There were two (20%) Posyandu with incomplete PIS 3 (30%) Posyandu with the PIS filled but incomplete, and 5 (50%) Posyandu already completely filled the PIS. The Incompleteness was largely contained in the registration of couples of childbearing age, women of childbearing age, marking N/T on the weighing result, as well as the age of the baby and toddler. Incomplete charging the Posyandu Information Systems was influenced by the performance of the health cadres.

In terms of completeness of the registration of the PIS, it was often found that the data was incomplete or there was a column that was not filled in PIS format. It was believed that the cadres filling the column on the PIS format as a formality and not too urgent. Besides the lack of information about how to charge or register the PIS was contributed to the cadres to be lesser capability to do a good recording. Seeing the enthusiasm of people into health cadres and the importance of the performance of cadres in the smooth registration of PIS there is a needs to improve the performance of health cadres in carrying out its role, especially the issue of completing the PIS. Therefore researchers interested in conducting a study entitled: "Overview Performance of cadres in the completeness of the records in the Posyandu Information System PIS in Puskesmas Taraweang 2016."
MATERIALS AND METHODS

This research using descriptive analytic design to see the picture of the knowledge, motivation and attitudes about the completeness of the recording of the Posyandu Information System in Puskesmas Taraweang on 2016. This research was conducted in Puskesmas Taraweang, on March 2016. The study population was all cadres Posyandu in Puskesmas Taraweang with total number of 115 cadres. The sample used in this study were respondents who existed at the time of the study. Samples were chosen using a simple random sampling technique.

RESULT

This study discusses an overview of the performance of cadres in the completeness of recording Posyandu Information System (PIS) in Puskesmas Taraweang on 2016. The data retrieval was begun on June 9th until August 9th, 2016. Respondents were 41-50 years old with total 42 respondents (47.2%) and the lowest was age > 50 (6.7%). Most of the cadres were in highest education level was elementary education (58.4%), while the information's system of integrated service station or Posyandu Information the smallest was high school (18.0%). Most of the respondents were housewife (IRT) (67.4%) followed by selfemployed (32.6%).

The majority of respondents were able to answer questions about the definition of integrated health information system (PIS) correctly, whereas dominant respondents answered with any questions about how many times a baby or toddler to do the registration in the PIS. Respondents stated knowledgeable enough as many as 40 people (44.9%), while respondents with less knowledge totaled at 49 individuals (55.1%). Most of the respondent stated that the integrated health information system was not so important to improve the performance of Posyandu, while most respondents were not approved of the nation that the health cadres need to keep records of infants and toddlers. Revealed that 53 (59.6%) respondents expressed a positive attitude while 36 (40.4%) expressed a negative attitude towards PIS activity in Posyandu.

In terms of supervision, the majority of respondents felt that the implementation of supervision was already adapted to the development Posyandu problems. Most respondents also considered that the team supervisor was not a competent person. Revealed that 55 respondents (61.8%) stated that supervision performed quite well while 34 (38.2%) respondents stated that the supervision conducted by Puskesmas officers was/unfavorable for PIS’s activity.

DISCUSSION

Posyandu Information System (PIS) is a series of events to produce the information in accordance with the and the right time for Posyandu's manager’s. The implementation of the system should be done in a systematic and consistent ways, but it is very dependent on the SIP program. In this case if the cadre of Posyandu had a good ability to apply the PIS program, then the information obtained will be complete and can be used for improving the performance of Posyandu. The ability in carrying out the SIP would be very determined by several factors attached to Posyandu such knowledge, attitude and supervision.

1. Cadre's knowledge

According to the result of this observation obtained from the data that Posyandu's cadre in local goverment clinic in Taraweang, Pangkep regency on 2016 revealed 49 cadres heve a lesser knowledge about PIS definition and it's application, compared to the
candidates who have a good knowledge around 40 cadres with accumulation 44.9%. The existant of three themes actually because of manifestation from requiring quantity from RSUD Pangkep area of activity. The growing number of diabetes patient who experience ulcus was the one factor that increase the need of the health professional training. It's also occur on nasokomial infection in training election which beckon that the main increasing the sum of infeksius patient was massif way of tuberculosis, even in leadership management has a signed with additional the new head room because the accretion of the service room at RSUD Pangkep.

In this observational study, it seems clearly that quarrel both of them was not long between Posyandu’s cadre that has a good knowledge relatively compare to those with lesser knowledge. The different was not big but it was able to indicate that actually the cadre has a good knowledge around 44.9. It’s means that this number could be one solution in addressing the problems of lack of knowledge about PIS cadres. The emergence of cadres with a good knowledge were large enough that cannot be separated from the two major factors that were more advanced than the information media and educational level of the cadres themselves.

The magnitude of enthusiastic people with internet access provided a variety of information is certainly easier and affordable to lower income people. As a result, knowledge about the activities undertaken by the individual will encourage the individuals concerned to know more about the activities over the internet. Through internet cadres might know the PIS through internet. Formal education does not teach directly about the PIS, but the academic culture that arises when attending the education will shape the character of individuals who always motivated to see more.

More over when the cadres in communities were having a fairly low level of education then it will be more spur individuals to seek information caused because she will be the center of information in society. It means that the level of education will be decisive paradigm of the public to make it as a source of information or a place to ask.

This study also revealed that there are 55.1% of the cadres who still have less knowledge. This figure proves that the cadre still need the support for Posyandu management in the provision of information. In addition to the media, Posyandu also required to provide motivation for volunteers to further develop themselves and have a culture to find out more or active again. Lack of knowledge of cadres in the view of researchers in the field was the lack of reward or salary earned relatively compare to the workload of cadres, it caused a less enthusiasm for cadres in carrying out its duties, let alone to determine the types of activities in more detail. In the future may be more cadres will be awarded based on their performance results hence further spur cadres could know more about the activities.

Previous research has also been analyzing the Posyandu cadre’s knowledge related to Posyandu information system such as the study, conducted by Nory Ris Nelty in 2012 for 30 respondents in Sukoharjo Kadilangu village. The results 17 respondents (56.67%) had good knowledge, 10 respondents (33.33%) have sufficient knowledge and 3 respondents (10%) have lesser knowledge. Discrepancy between our results with the results of previous research. This indicates Posyandu cadres still need education about the PIS and its application, because there were many Posyandu cadres that did
not gain a better understanding of the PIS. Although the cadres that did not application, but they did not know why they were doing such actions. This require attention because when actions in recording were made not based on the knowledge it will result in a lack of creativity in tackling problems in the PIS registration.

Knowledge is of absolutely nothing to guarantee the success of a program or system to work, because according Suparyanto (2012) knowledge is the guidelines for establishing a person's action and the motive for someone to perform an action based on the knowledge he has. It is concluded that knowledge is processed cognitively that shape attitudes then become the motive for the act. This indicates that there was a relationship between the knowledge Posyandu cadres related to the PIS to the success of the PIS program. This could happen because this system required a collection of application of knowledge that conformity action.

Wawan (2011) in his book also explains that knowledge is the result of the idea, and this occurred after people perform sensing on a specific object. Sensing occurs through the human senses, the senses of sight, hearing, smell, taste and touch. Cognitive domain knowledge is very important in shaping a person's actions (overt behavior). Researchers assume that an action process that has a sequence that is systematically clearly requires knowledge of the act in it, even to create a person's actions need to study and train in some frequency, because knowledge not only provide guidelines on actions to be taken but also to provide a motive or impulse against individuals that foster self-confidence a person to carry out such action.

Knowledge of the application of the PIS is rather difficult to know comprehensively considering the things that are practical only a cadre must be confronted of many PIS format. Knowledge of the number of the PIS format will certainly confuse the cadres of Posyandu that in fact generally have a maximum of middle and high school education. In accordance with the theory expressed by Suparyanto (2012) one of the influences of knowledge is the education level of the individual. This is why the cadre Posyandu only follow habits such as weigh and record the weight but the charging format is sometimes not done formally and comprehensively.

Even some cadres who did not know that what has been filled was a PIS format. It is new that is practical, not theoretical in nature as it concerns the definition, benefits and destination of the PIS. Theoretical knowledge as described earlier will be even more difficult to know the cadres of Posyandu, because such knowledge cannot be known through work experience but must go through the process of academic seminars.

2. Relation Characteristic of Cadre (Level of Education, Employment and Age) with Cadre’s Knowledge.

Posyandu cadre education levels in this study were divided into three categories: elementary, middle and high school level. The groups of cadres with diplomas SD dominate the distribution of the sample with the number 52 cadres or 58.4% of the total number of cadres were selected as sample. It becomes a separate picture that the level of public education who was appointed as Posyandu cadre was relatively low, it would be enough to affect the ability of cadres to understand the things that were theoretical and systematic.

This weakness was evident in the fact that the results of research showed that the group of cadres at the level of high school education were more capable to understand the PIS well as
many as 10 cadres or 62.5% of the entire cadre of qualified high school. The level of higher education will bring forth awareness to learn more both theoretically and practically in nature so that a cadre will likely want to know something. It is very suitable to the nature of the PIS skilled cadre of both theoretical and practical. The PIS in practice certainly requires the ability to read and write properly, it will be difficult when a cadre, have low education. Not to mention the implementation will often work with the clock that requires speed and accuracy. The problem in Posyandu is regeneration, generally people who are highly educated women are busier than the less educated women so that they cannot be invited to join the Posyandu as cadre. As a result, the existing cadres usually have low education level. In addition to education level, employment status seems less influence knowledge of the PIS, it looks like the cadre who were housewives know little more about the PIS. It means that the lack of bustle in the work is not a spur of the cadres to know more about the PIS. Researchers do not think that the profession of housewife was less than other profession.

Researchers looked at from another point of view that it is unlikely the community would be a cadre if they have a full schedule of activities at home so the researchers concluded that a housewife who became cadres at least have time enough to dedicate himself to be a cadre. Leisure time is the focal point of interest for the investigators to see if the housewife is concerned to be able to use and find out more about PIS theory. Nowadays almost every family has access to the internet either from mobile phones or laptops. These can be used by these cadres to seek information about the PIS. Cadres whose occupation were self-employed worker generally has a busier and denser workload than the housewife. The reason is because self-employed worker such as traders certainly requires a lot more time. These dense workloads were seen as obstacles for PIS cadres to know well about the PIS. The current study revealed that 58.6% of all volunteers who work as entrepreneurs turned out to have poor knowledge. However, busyness was not always associated with someone’s knowledge.

The results of the study showed that housewives who incidentally has less busy schedules was still un able to know the PIS well. While bussier entrepreneurs were able access more information about the PIS. The results also showed that age of the cadre was also less influential on the level of knowledge about the PIS. The youngest cadres which was under 30 years old had limited knowledge of the SIP. However a cadre of young age could potentially increase their ability to learn more robust about the PIS compare to the older cadres. The ability to learn better is held by the younger age groups, however experience is also provides enough information to learn some-thing’s well.

3. Cadre’s attitude

Based on this research, the data showed that the majority of Posyandu’s cadres in Puskesmas Taraweang Pangkep regency on 2016 looked positively on this PIS program (59.6%) when compared to the cadres who think negatively towards the PIS program (40.4%). It was concluded that cadres regarding the PIS program was mostly positive. Research showed a large group of Posyandu cadre who were responded positively about the PIS program, a positive attitude was emerging as a result of the evaluation that was done indirectly by the cadres.
In the recording may first cadre regard this as an activity that is less than helpful, but when it is recording both the cadres will see the functions of the record. Because it can be used as a comparison to the current condition. This positive attitude also appears as cadres feel being part of an institution Posyandu so that they will feel obligated to support any program of the organization. By contrast, if the cadre supervision of its then most likely not the same positive attitude because they are outside the institution and they are not directly involved in implementing the PIS program.

PIS is important, but each case would have a different point of view, but the viewing angle is negative can be overcome with a discussion to change the paradigm of cadres, so that the negative attitudes that emerged in this study can actually be solved through meetings, seminars or discussions involving cadres Posyandu to the knowledge formed through these media, was able to bring a positive attitude about the PIS. The results are consistent with results of previous studies regarding our attitude Posyandu cadre of information systems Posyandu conducted by Latif in 2011 in Puskesmas Wonokerto Pekalongan, this study involved 70 cadres Posyandu as the sample with the results showed cadres behave agree to SIP for 60% (some 42 cadres), while the cadres who behave do not agree as much as 40% (some 28 cadres).

The dominant attitude is positive according to the researchers was the result of observations made by the cadres Posyandu the recording does. The cadres will lead to the belief that the recording of his accomplishments would have been useful to know the progress of the activities that he did, as an example of the cadres certainly believe that when they keep records of the condition of infants and toddlers for example weight then it will be useful as a benchmark on the next weighing result.

Observations of experience which has resulted in a positive response by the cadres Posyandu, unfortunately, a positive response is merely a representation of the assessment of some of the functions of the PIS, suppose cadres overall Posyandu know about PIS application then the positive attitude they will be even greater.

This is consistent with the theory expressed by Aro (2013), that one structure of attitude is a cognitive component, where it is a representation of what is believed by the individual owner's attitude, the cognitive component contains the trust stereotypes individuals have regarding something analogous handling (opinion) especially when it comes to controversial issues or problems. As mentioned before that the real core of the positive attitude Posyandu cadres are their paradigm about whether recording made by them essential to the next activity, this paradigm can be used to explain why there is a group of volunteers who have a negative view of the SIP program. The attitude arises because there are groups of volunteers who found the recording he did only a formality and not too important, so there arose a negative attitude to the whole of the SIP program.

This phenomenon reveals that there is involvement of knowledge in decision Posyandu cadre attitude towards SIP program, in accordance with the characteristics of the attitude expressed by Aro (2013) that the attitude is not inborn but formed or studied. Through the process of forming and learn this knowledge obtained Posyandu cadres and then applied in the form of an attitude. There are interesting from the process of formation of this attitude, in this case the attitude formed by the
respondents came from the program SIP that has been done, but generally sikaplah which ultimately resulted in action.

In theory known components conative which is an aspect of the tendency to behave in accordance with certain attitude that is owned by someone. The question that arises is why there is a difference in the attitude of the groove on the formation of two illustrations above, it indicates the action is not affected by Posyandu cadre attitude toward PIS. Although cadres are positive or negative for SIP program, it will not disrupt the recording, then why are they still record their assumption when the SIP is negative, this is because Posyandu cadres feel in a system that requires them recorded.

The feeling of being in this system forming subservience to what is instructed by the Posyandu’s officer. The second reason is the gap between the education level cadres Posyandu with Posyandu staff, this causes Posyandu cadre perform SIP program is not caused by their attitude towards the SIP program, but more because of their attitude towards Posyandu’s staff.

CONCLUSIONS

Based on the results of the research on performance of cadres in the completeness of picture recording Posyandu Information System (PIS) in Puskesmas Taraweang on 2016 obtained the following:
1. Performance in the completeness of recording cadres Posyandu Information System (PIS) based knowledge in Puskesmas Taraweang Pangkep on 2016 mostly less know about PIS registration.
2. The performance of cadres in the completeness of recording Posyandu Information System (PIS) based attitude in Puskesmas Taraweang on 2016 Pangkep dominant positive about recording PIS address.
3. Performance in the completeness of recording cadres Posyandu Information System (PIS) based supervision in Puskesmas Taraweang Pangkep 2016 tend to state supervision execution is good enough.

We can suggest that:
1. Cadre’s knowledge of recording PIS would be improved through education, seminars or trainings to further increase their insight in terms of recording PIS, besides cadres who already have a fairly good knowledge about the registration of SIP to be intensified to become mentors for cadres other too much for create comfort in receiving information through fellow cadres.
2. The dominant positive attitude of this cadre can be used to repair your registry system more advanced SIP for example in terms of technology, health center staff can improve the system for recording through a computerized process so that the recording is done more quickly and accurately.
3. The process of supervision which most cadres are good enough should not be used as guidelines or are directed towards the implementation of supervision more strict and formal, since the implementation of supervision more rigorous and formal it will have a negative impact on the perception of cadres, the tradition of supervision which is polite and more prioritizes the solution can be maintained.
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THE CORRELATION BETWEEN REPRODUCTIVE HEALTH EDUCATION AND KNOWLEDGE AND ATTITUDE OF ADOLESCENT

Kusbaryanto¹, Hatasari²

¹Bagian Ilmu Kesehatan Masyarakat Fakultas Kedokteran dan Ilmu Kesehatan, Universitas Muhammadiyah Yogyakarta
²Mahasiswa Fakultas Kedokteran Program Studi Pendidikan Dokter, Universitas Muhammadiyah Yogyakarta

ABSTRACT

Adolescent pregnancy remains a major contributor to maternal and child mortality and to the cycle of ill-health and poverty. Adolescent pregnancies are more likely occur in poor, uneducated and rural communities. In some countries, becoming pregnant outside marriage is not uncommon. Some girls do not know how to avoid pregnancy: while sex education is lacking in many countries. Pregnancy and childbirth complications are the second cause of death among 15 to 19 years old globally. The aim of this study was to analyze correlation between health reproductive education and knowledge and attitude of the adolescent.

This study was a quasy experiment with nonequivalent control group design. The sample of this study used purposive sampling with 25 respondents in the experiment group and 27 respondents in the control group. The data was analyzed by Wilcoxon and Mann Whitney. Data was collected using questionnaires.

The result in this study showed that in the control group, the value of knowledge was p=0.075 (p>0.05), while value of attitude was p=0.080 (p>0.05). In experiment group the value of knowledge was p=0.001 (p<0.05), while value of attitude was p=0.088 (p>0.05). The result showed that in experiment group of knowledge there was a significant difference, but the experiment group of attitudes was no significant different, while in control group there wasn’t a significant difference.

In conclusion, there was significant correlation between health reproductive educations toward knowledge, but there was no correlation attitude of health reproductive on adolescent.

Keywords: Education of Health Reproductive, Knowledge, Attitude, Adolescent.

INTRODUCTION

Teen issues always happen around us, especially issues that related with the reproductive health. Indonesian teenager who have considered as sexually active was felling embarrassed or did not want to consult about their reproductive health with the medical personnel. The lack of communication between parents and children about the reproductive health is the cause of the minimum of correct reproductive health (Gowanda, 2007).

Most of the Indonesian society misjudge that sexuality only concern about the sexual relation between men and women, which only can be done after marriage. Another sexuality issues on adolescence such as menstruation, wet dreams, genitals, reproductive organ and its function that should be taught in school are sometimes not given because of the sexuality or reproductive health still taboo to talk about. If the adolescence reproductive health cannot be treat as an urgently issues that must be addressed
seriously and continuously, it is not impossible that sexuality victim in teenager will increased (Rahman, 2013).

In other countries, reproductive health and sexuality are the important topics that must be delivered to the adolescence. Tunisia for example, as a Muslim country Tunisia become the first country that introduce the reproduction and family planning in their school curriculum in early 1960s. Turkish is one of the countries that include reproductive health and sexuality in their school curriculum. “Puberty Project” is a program in elementary school that given to students in the last three years during eight years education. In Puberty Project every school will provide textbook and bring experts of reproductive health to answer the questions from student and discuss the reproductive health issues (Fahimi, 2011). In Malaysia, since December 1994 “Family Health Education” was included in their elementary school. Muslim students were also introduced to reproductive health and sexuality in Islamic religious education program (Rahman, 2011).

World Health Organization (WHO) has recommended to improve the quality of antenatal care to reduce infant mortality and complications of labor and provide a positive pregnancy experience for pregnant women. Approximately sixteen million women at the age fifteen until nineteen and around one million under fifteen has delivered every year especially in development country. Complications during pregnancy and infant mortality is the second cause of death in women aged fifteen to nineteen years old. Every year three million abortions occur in women aged fifteen to nineteen years old (WHO, 2016).

In this twenty first century, women health increase, but still, a lot of women died because of the complications during pregnancy every year. Most of the complication that happen in America because of the hypertension, diabetes and heart disease. Although there is tendency to decrease, the death rate in America because of pregnancy increase after the aged twenty years. One of four deaths related with pregnancy is because of the heart condition, infections, bleeding and blood pressure (CDC, 2016).

The purpose of this research was to determine the relation between reproductive productive health education and knowledge and attitudes on reproductive health.

**MATERIALS AND METHOD**

This research was a quasy experimental with nonequivalent control group design. The sampling technique used purposive sampling with twentyfive respondents on experiment group and twentyseven respondents on control group. Data analysis that used was Wilcoxon and for different test used Mann Whitney. Collecting data technique in this study using a questionnaire.

**RESULT**

The result of normality test using Sapiro Wil test on all of the data shows that p<0.05 which mean that the data distribution was not normal. Non-parametric test that used in this research was Mann-Whitney test. To evaluate homogeneity there was non-parametric test with Mann-Whitney test, the result of ages from this test p=0.328 (p>0.05). This showed the homogeneity of the subject between the groups (control group with experiment group).

The result of the knowledge measurement about reproductive health before and after treatment on control group with Sapiro Wil test, concluded that the data was not normal. Using Wilcoxon to measure the previous data, acquired p=0.075 (p>0.05), concluded that data on the control group did not have
any different between the pre-test and post-test.

Table 1. Result of the normality test between experiment and control group.

<table>
<thead>
<tr>
<th>Age</th>
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<tr>
<td>Group</td>
<td>(%)</td>
<td>Group</td>
<td>(%)</td>
</tr>
<tr>
<td>14 years</td>
<td>3</td>
<td>15 years</td>
<td>16</td>
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<td></td>
<td>12</td>
<td></td>
<td>64</td>
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<tr>
<td>15 years</td>
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<td>16 years</td>
<td>5</td>
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<td>64</td>
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<td>16 years</td>
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<td>17 years</td>
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<td></td>
<td>20</td>
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<td>17 years</td>
<td>1</td>
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<td>4</td>
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<tr>
<td>Total</td>
<td>25</td>
<td>Total</td>
<td>27</td>
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<td></td>
<td>100</td>
<td></td>
<td>100</td>
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<tr>
<td>p</td>
<td>0.328</td>
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</tbody>
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Table 2. Different Knowledge about Reproductive Health on Control Group and Treatment Group

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Control Group</th>
<th>Treatment Group</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>mean</td>
</tr>
<tr>
<td>Pre-test</td>
<td>27</td>
<td>11.7</td>
</tr>
<tr>
<td>Post-test</td>
<td>27</td>
<td>11.7</td>
</tr>
<tr>
<td>p</td>
<td>0.075</td>
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</table>

*Significant (p<0.05), **Non Significant (p>0.05)

The result of knowledge measurement about reproductive health before and after treatment on control group using Saphiro Wilk test, concluded that data was not normal. Using Wilcoxon test on the previous result, acquired p=0.080 (p>0.05), concluded that on control group there was no different between pre-test and post-test.

The result of knowledge measurement about reproductive health before and after treatment on treatment group using Saphiro Wilk test, concluded that data was not normal. Using Wilcoxon test on the previous result, acquired p=0.088 (p>0.05), concluded that on treatment group also have no different between pre-test and post-test.

**DISCUSSION**

On 2011 World Health Organization (WHO) had been published the attempt to prevent the early pregnancy and complication in reproduction process by giving six recommendations, which are: 1) decrease the number of marriage under eighteen years old; 2) decrease the number of pregnancy under twenty years old; 3) increase the use of contraception on adolescents; 4) decrease free sex on adolescent; 5) decrease the number of abortion on adolescent; and 6) increase pregnancy service and post childbirth on adolescent (WHO, 2016).

Knowledge is the impression in human mind as the result of using their five senses. Knowledge that covered in cognitive domain has six level, which are: 1) know, which is remember the material that already learned; 2) comprehension, this is the ability to explain in a correct way about the object that already known and can be interpret the material widely; 3) application, the ability to use the material that already learned on real situation and condition; 4) analysis is an ability to elaborate material or object into the component, but still in the
organization structure; 5) synthesis, the ability to separate or connect the component in the whole new point; and 6) evaluation is an ability to evaluate about one particular material or object (Mubarak et al., 2007).

Attitude is a reaction or respond of individual toward a stimulus or object. Attitude is tendency to act. Attitude has not yet materialized in the act, because to materialize an act need another factors which are facility or medium and infrastructure. A pregnant woman already know that it is important to pregnancy check for their health and their fetus, usually they already have their intention to pregnancy check. To make those attitudes become an act, they will need midwife, Posyandu, Puskesmas that near from their house, for the sake of facility that will be easier to reach by a pregnant women (Notoatmodjo, 2005).

After the education’s process apparently there is an upgrade about the knowledge of reproductive health, the more knowledge about reproductive health expected will give positive attitude about reproductive health. The increase of knowledge is caused by education material, the acceptance about education material have a role as reinforcement positive and become stimulus to increase the knowledge about reproductive health (Wei & Yazdanifard, 2014). For the attitude about reproductive health apparently there is no different between pre-test and post-test, it means that education did not have any effect about the attitude toward reproductive health.

**CONCLUSION**

There is meaningful connection between educations of reproductive health with adolescent knowledge about reproductive health and there is no different between the educations of reproductive knowledge with the adolescent’s attitude towards reproductive health.

**REFERENCES**


THE CORRELATION BETWEEN HYGIENE SANITARY OF WATER SUPPLY DEPOT WITH ESCHERICHIA COLI BACTERIA IN DRINKING WATER AT SUB PANAKKUKANG MAKASSAR 2016

Alfina Baharuddin, Susanti*

*Departement of the Enviromental Health, Moslem University of Indonesia
Email: alfina.riyadi@gmail.com

ABSTRACT

The quality of drinking water consumed should be met the standard requirement. Based on data obtained from the District of Health Office Makassar, numbers of diarrhea patients in the District Panakkukang were 2,753 people. The high prevalence of diarrhea incidence is often contribute by the quality of drinking water. The quality of water taps in District Panakkukang including clean water class D is categorized as low quality because the number of the the bacteria Escherichia coli >1100 cells/100mL. Because of this reason, many people prefer to use refilled water from supply depot compared to taps water. The study aims to determine the content of Escherichia coli in water supply depot in District Panakkukang Makassar.

This research was observational analytic with cross sectional approach. Population was 81 drinking water depots, sampling was done by purposive sampling at 22 water depots then examined and analyzed in the laboratory.

The results showed that of the 22 samples studied contained 20 refilled drinking water met the standard requirement and 2 samples were not eligible. The quality of refilled drinking water can be attributed to proper processing equipment. The samples had positive Escherichia coli bacteria might be related to the improper sanitary conditions around the depot and processing equipment that some processing tools has been severely damaged. The results of the analysis showed no relationship between processing equipment of drinking water with Escherichia coli (p value 0.026) and there were no correlation between the condition of the drinking water treatment, hygiene condition of handlers and also raw water with Escherichia coli (p value 1.000).

It is suggested to the owner of refilled water depots that already produced qualified drinking water that met the standard of Minister of Health in 2010 should maintain the quality of drinking water produced and for refilled water depot that not produce qualified water should put more attention on water processing equipment and replace all the damaged or expired tools.

Keywords: MPN E.coli, Hygiene sanitation, refilled drinking water depot

INTRODUCTION

Water is one of the necessities of life and fundamental to the livelihoods of the earth. Without water, various life processes cannot take place. Therefore, the water supply is one of the primary needs for human survival and the determining factor in the health and well-being (Sumantri, 2013).

According to WHO calculations in developed countries each person needs between 60-120 liters of water per day, while in developing countries, including Indonesia every person requires between 30-60 liters of water per day, between the
water utilities is very important is the need to drink. Hence, for drinking purposes (including meals) water must have special requirements so that the water does not cause illness to humans (Tombeng et al, 2013).

Target of water services "Millennium Development Goals (MDG's) contains formulation of eight goals, 18 targets and 48 indicators, where the target-7, the target of the 10 shows on the formulation of" clean water and sanitation is a basic human right "so that at the Earth Summit in Johannesburg in 2015 is expected to meet its target of clean water services to 80%. MDG's target on water services has been agreed by the Central Government, Provincial and Regency/City in Indonesia. Service improvement of safe drinking water (pipeline and non-pipeline) in 2015 in Indonesia reached 68.87% with a protected water source for urban areas amounted to 78.19% and 61.60% in rural areas. It is expected that in 2020 will reach 85%. On a national scale water supply, up until now only reach about 60%, meaning there's still 40% or about 90 million people of Indonesia are forced to use water that is not health viable (Asmadi et al., 2011).

Most of the drinking water needs of the community is fullfilled by well water and taps water that has been processed by the Regional Water Company (PDAM). Along with the rapid advancement of technology coupled with increasingly busy human activity then people tend to choose a practical way with a relatively low cost to meet the drinking water needs. One of alternative to meet the needs of drinking water is using refilled drinking water (Simbolon, 2012).

The presence of bacteria is related to sanitation hygiene and personal hygiene. Sanitation hygiene is a business that is done to control the factors that cause the pollution of drinking water, handlers, places and equipment that may or may not cause disease or other health problems (WHO, 2010). The presence of refilled water depot as an alternative of the drinking water may bring some issues. If consumers do not pay attention to its safety and quality it may pose the health risk (Putri, 2015).

Results of research conducted by Partiana (2015) in the city of Bandung showed that there was significant relationship between raw materials, equipment, processing, hygiene and sanitation depot with bacteriological quality of drinking water. Subdistrict Panakkukang Makassar City has an increasing number of refilled drinking water depots. Based on data from the District of Health Office Makassar, total refilled drinking water depot that is registered in the District Panakkukang many are 81 water depots, which meet the standard are 69 depots, and that not meet the qualification are 12 depots. The disease that often related to the low quality of water drinking is diarrhea. The cases of diarrhea were totaled 2,753 people (District of Health Office Makassar, 2015). The aim of this research was to analyse the Correlation of Hygiene Sanitation Of Water Supply Depot to Escherichia Coli Bacteria In refilled drinking Water At Sub District Panakkukang Makassar, 2016.

**MATERIAL AND METHOD**

The type of this research is observational analytic method with cross sectional approach. Research was conducted at the refilled drinking water depot in District Panakkukang Makassar on March -April 2016. The population in this study were all registered depot of refilled drinking water (81 depots) in the District Panakkukang were. The sample in this study were 22 depots that purposively chosen with the criterias:
1) Available sampled
2) Refilled water depot already established 5 years and has followed
sanitation hygiene training conducted by the District of Health Office Makassar.

3) Undergone every 3 months examination of refilled Drinking water samples from District of Health Office Makassar.

The data collected with several ways: a systematic observation and recording of the object under study, direct interviews to the owner of refilled drinking water depot. Primary data were obtained from the results of laboratory examination of the E. coli content in drinking water refills. Interviews and observations using the observation sheet modifications to the Regulation of the Minister of Health of the Republic of Indonesia Number 43 of 2014 was done to the owner of refilled water depot. Four aspects were assessed including site conditions of drinking water treatment, drinking water treatment equipment, personal hygiene and raw water. Secondary data were obtained from Makassar city health department (what type of secondary data that was obtained??).

Data Analysis was performed by Chi-Square with significance level of 5% and a confidence level CI=95%. If p<0.05 means there is a statistical relationship between the independent variables and the dependent variable, otherwise if p>0.05 means that there is no statistical relationship between the dependent and independent variables.

RESULT

Based on the results of the laboratory tests there are 22 samples examined from 10 villages in the district Panakkukang there are 20 samples of drinking water refill (90.9%) were eligible based Permenkes No. 492/Menkes/Per/IV/2010 and was not found E. coli bacteria in drinking water refill depot and then there were 2 (9.1%) were ineligible and found E. coli bacteria in drinking water refills. Depot the results of the examination are not eligible are located in the Village and Village Pampang Panaikang.

Table 1. The correlation between Site Conditions Drinking Water Treatment Bacteria Escherichia coli Ingredients in Drinking Water Depot Refill in District Panakkukang Makassar City 2016

<table>
<thead>
<tr>
<th>Site Conditions Drinking Water Treatment Bacteria</th>
<th>MPN E.coli</th>
<th>Total</th>
<th>p. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not eligible vs Eligible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
<td>n (%)</td>
<td>N (%)</td>
<td>1,000</td>
</tr>
<tr>
<td>Not eligible</td>
<td>2 10,0</td>
<td>18 50,0</td>
<td>20 100,0</td>
</tr>
<tr>
<td>Eligible</td>
<td>0 0,0</td>
<td>2 100,0</td>
<td>2 100,0</td>
</tr>
</tbody>
</table>

There was no correlation between the condition of the drinking water treatment with E. coli bacterial content in drinking water in Sub Panakkukang Makassar City.

Table 2. The correlation between Drinking Water Treatment Equipment Content Escherichia coli Bacteria in Drinking Water Depot Refill In District Panakkukang Makassar City 2016

<table>
<thead>
<tr>
<th>Drinking Water Treatment Equipment Content</th>
<th>MPN E.coli</th>
<th>Total</th>
<th>p. value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not eligible vs Eligible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td>0.026</td>
</tr>
<tr>
<td>Not eligible</td>
<td>2 50,0</td>
<td>2 50,0</td>
<td>4 100,0</td>
</tr>
<tr>
<td>Eligible</td>
<td>0 0,0</td>
<td>18 100,0</td>
<td>18 100,0</td>
</tr>
</tbody>
</table>

Table 2 showed that the entire refilled water depot with good water treatment equipment had acceptable MPN E. coli content. There was a relationship of water treatment equipment and MPN E. coli.
Table 3. The correlation between personal hygiene with the content of Escherichia coli Bacteria in Drinking Water Depot Refill in Sub Panakkukang Makassar City 2016

<table>
<thead>
<tr>
<th>Personal hygiene</th>
<th>MPN E.coli</th>
<th>Total</th>
<th>p. value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not eligible</td>
<td>Eligible</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Not eligible</td>
<td>2</td>
<td>9,5</td>
<td>19</td>
</tr>
<tr>
<td>Eligible</td>
<td>0</td>
<td>0,0</td>
<td>1</td>
</tr>
</tbody>
</table>

Based on Table 3 showed that most of refilled water depot handlers did not have adequate personal hygiene. There was no correlation of personal hygiene and MPN E. coli content in refilled drinking water.

Table 4. The correlation between raw water with the content of Escherichia coli in refilled drinking water depots in District Panakkukang Makassar City 2016

<table>
<thead>
<tr>
<th>Raw water</th>
<th>MPN E.coli</th>
<th>Total</th>
<th>p. value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not eligible</td>
<td>Eligible</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Not eligible</td>
<td>2</td>
<td>9,5</td>
<td>19</td>
</tr>
<tr>
<td>Eligible</td>
<td>0</td>
<td>0,0</td>
<td>1</td>
</tr>
</tbody>
</table>

Based on Table 4 showed that most of the raw water for refilled drinking water was categorized as not eligible. However the MPN E. coli content in the ineligible raw water mostly appropriate to the standard. There was no correlation of raw water and MPN E coli.

**DISCUSSION**

The possible causes of bacteria found on the depot AA with a bacterial count of 2.2 cells/100ml in addition to the condition of inappropriate drinking water treatment was the conditions of processing site near the food and grocery sellers that may attract flies as it is well known that the food borne disease vectors and can pollute or contaminate equipment, raw water and water production.

The spread of E. coli bacteria that comes from human to human bacteria is spread by flies, through dirty hands, food or water contaminated with feces (Wulandari, 2015). The Owners of depot also said the water processing equipment was already old enough and they plan to replace all of the equipment and renovate but it is lack of funding. The other depot had E. coli of 6.9 cells/100ml. This happens because the processing equipment was severely damaged since there is no facility filler gallon bottle in an enclosed space, save the bottle cap near the coop and there are no tools sterilization or disinfection such as UV, ozonized and RO. Based on interview, the owner said that the depot did not use sand filter equipment and this equipment only used during the examination and supervision from district of health office.

Contamination can be caused by the condition of main equipment particularly for disinfection (ultraviolet) that is not replaced regularly. In addition, cleaning of equipment and filters that are not routinely maintained can cause contamination (Kadir, 2012)

Another factor that cause the bacteria were found in samples of drinking water AL because of improper hygiene and sanitation surround the depot such as water processing site near chicken cage and the space was congested by the pile of LPG tube. The results of refilled drinking water depot observations showed that almost all depot drinking water study did not have a trash-covered and almost all depot there did not provide hand washing facilities that include running water with soap. The facilities to clean the refilled bottle had improper sewerage that make the flow of dirty water enter the floor at the depot. This study is in line with research conducted by the Pious (2013) in
which the statistical test showed that there was a significant correlation between the condition of the equipment by bacteriological E.coli with \( p = 0.001 > 0.05 \). As well as research conducted by Munthe (2012) showed that there was a relationship between the tool and equipment of refill drinking water depot with bacteriological quality where \( p = 0.001 < \alpha = 0.05 \). Tools and equipment is one aspect that must be considered in determining the bacteriological quality of refill drinking water depot.

Based on observations at the depot, it found that raw water reservoir was not covered and there is no water filling a gallon in an enclosed space. Depot with good water treatment equipment had required MPN E. coli. The good condition of equipment and water treatment processes that meets the requirements will produce good drinking water as well. Conversely, if the process and water treatment equipment not met the standard requirement it may induce bacterial contamination (Natalia, 2014).

Based on observations conducted almost all drinking water depot studied in District Panakkukang had disinfection equipment such as UV, RO and ozone and sand filtration and water filtration functioned properly. The results of observations of the condition of hygiene handlers at the depot drinking water in Sub Panakkukang all handlers were in good health and did not suffering from an infectious disease but some of the owner of the depot or handlers was smoke when serving consumers and did not have regular health checkup at least 1 times a year. All of the depot had certificate of sanitation and hygiene training from district of health office. Based on the results of Interview to owners of drinking water depots that they were usually invited by the district of health office to attend the training once a month or once in 3 months, and every 3 months drinking water sample examination was done. For the depot who had examination, the signed was put in front of their depot. The practice of hand washing before serve the customer was low due to lack of awareness and hand washing facilities. Refilled drinking water depot at least should provide sanitation facilities such as hand basins that include soap, water supply, running water from the tap, hand sanitizer, cleaning wipes for gallon and provide a unit dispenser and drinking water sample for visitors (Depkes and WHO, 2003).

This study is in line with research conducted by Empress (2007) stated that there was no correlation between the condition of the raw water with bacteriological quality of drinking water with \( p = 0.173 \). But not in line with the research from Rahayu (2013) that showed that there were significant relationship between the microbiological quality of the product water refill drinking water depot with a value of \( p = 0.001 \). This is supported by Sembiring (2008) stated the strong relationship between the source of raw water by the bacteriological quality with \( p = 0.000 \). The quality of the raw water determines the quality of produced drinking water. Storage of raw water over three days can reduce the quality of drinking water (Abdilanov, 2012). According to almost of all depot owners said that raw water was stored no more than three days because the demand of drinking water increases every day.

**CONCLUSIONS**

The results showed most of the refill drinking water were meet the requiremens. There was relationship between water treatment equipment with bacteria Escherichia coli. There was no correlation between the condition of the drinking water treatment, hygiene condition of handlers and also raw water with the Escherichia coli count.

It is suggested to the owner of refill drinking water depot Panakkukang
to put more attention for on condition of water processing equipment and replace all the equipment that are not in good condition or expired.

REFERENCES


An outbreak of food poisoning reported by Puskesmas Bandar Kedungmulyo on May 28th 2016 which occurred in 48 cases after communal event for the Orphans’s in Semelo Village Jombang District. The aim of this study were to find out the epidemiology description, etiology and the source of food poisoning. This investigation was a cross sectional study. The total samples ini this study were 73 people that obtained by using accidental sampling technique. This study used primary data that obtained by food processing observation and case tracking, while secondary data were obtained by Bandar Kedung Mulyo reports. Laboratory tests carried out on the food and the rectal swab on 3 cases. Data were analyzed descriptively. Almost cases complained about fever (96,6%), dizziness (91,4%), and malaise (86,1%). Cases mostly occurred in males (AR=89,7%) and the biggest risk occured in the toddler age group (0-5 years) (AR=100%). The outbreak period was 2 to 23 hours. The most suspect food was chicken soup (98,3%). The agent of food poisoning based on outbreak period and symptoms was Escherichia coli and confirmed by laboratory results. Food poisoning Outbreak in the Semelo Village caused by E. coli that contaminated the chicken soup. Health Office needs to prioritize the food service providers who need to obtain comprehensive supervision and media campaign that concerning in hygiene and sanitary of food processing.

Keywords: Outbreak, Food poisoning, Escherichia coli

INTRODUCTION

Food is one of the basic human needs. Food can be a main line of the pathogens bacteria and toxins spread. Food also can cause serious problems if they contain toxins due to chemical contamination, hazardous materials and natural toxins contained in the food, some of which cause the food poisoning outbreak (Ministry of Health, 2015).

Food poisoning outbreak is an event where there are two or more people ill with the same symptoms or nearly the same after consuming food, and based on epidemiological analysis, the food proved to be a source of infection (Ministry of Health, 2013). This incident identified by a number of people who usually occurs within a short time frame that varies greatly (several hours to several weeks) after consuming some food, generally occur in people who consume food together (Chin, 2000).

Food poisoning outbreaks in Indonesia in 2011 was 177 events (7.686 cases) and Case Fatality Rate (CFR) was 0,35%. This figure increased by 76.27% in 2012 or as many as 312 events with 9.626 cases and CFR 0.19%. In 2013, food poisoning outbreaks in Indonesia decreased by 25% from 2012 with 233
events but occurred on 27,405 cases and the CFR was 0.10%. This figure rose again by 31.33% in 2014 with 9,657 cases and CFR 0.42% (Ministry of Health, 2015).

National Agency of Drug and Food Control (NADFC) Data in 2014 showed that the sources of food poisoning outbreaks in 2014 were household cooking with 17 events (36.17%), food catering services were 13 events (27.66%), snacks were 12 events (25.53%), and processed food were 5 events (10.64%). According to WHO (2001) the majority of cases of food poisoning outbreaks is caused by mishandling during the preparation of food at home, catering services, canteens, hospitals, schools, military bases, or at banquets or parties.

Food poisoning outbreaks in homes generally occurs in family party event such as weddings, circumcisions, aqiqah, tahlilan, and others. In the event, the food usually served and managed by the household itself with the help of neighbors. The food is managed in large quantities without a good way of food processing, in accordance with the principles of food safety. Temperature and improper processing time are most frequent risk factors that cause the food poisoning in the household (NADFC, 2012).

Semelo village is a village in Jombang which had a food poisoning outbreak. This incident was known based on the information from Bandar Kedungmulyo Public Health Center (PHC) on May 29th, 2016 stating that there were some patients who had similar symptoms within adjacent times after eating food at the communal event for orphans in the village. As a follow-up to this incident, then an epidemiological investigation aimed to identify the determination of outbreak status, epidemiology description, etiology and the source of poisoning was conducted.

**MATERIAL & METHODS**

This investigation was a cross sectional study. The population was all of the participants in communal event for orphans in the Semelo village. The total samples in this study were 73 people that obtained by using accidental sampling technique. This study used primary data that obtained by food processing observation and case tracking. Instruments in this study were food poisoning outbreak forms by Ministry of Health in 2011. The secondary data were obtained by Bandar Kedung Mulyo reports to identify the number of patients, patients address, symptoms, and consumed food. Laboratory tests carried out on the food and the rectal swab on 3 cases. Data were analyzed descriptively.

**RESULTS**

Jombang District Health Office on May 29, 2016 received reports from Bandar Kedungmulyo PHC stating that there was an increase of cases drastically within the same time and with the same symptoms as nausea, vomiting, fever, dizziness, diarrhea, and abdominal pain. These patients had the symptoms after consuming food at the communal event for orphans in the Semelo village.

The food poisoning outbreak in the Semelo village first occurred on May 28th, 2016 at 16:00 pm while the exposure time (time consuming) at 14.30 pm. The food poisoning outbreak ended on May 29th, 2014 at 13:00 pm. Thus the shortest incubation period of food poisoning occurred during 1.5 hours and the longest incubation period occurred during 22.5 hours. As can be seen on Fig.1, the epidemic curve in this outbreak was common source epidemic (CSE).
Figure 1. The Epidemic Curve of Food Poisoning Outbreak in Semelo Village, Jombang District – East Java, 2016

Based on investigation, known that there were 58 participants who had symptoms. The attack rate (AR) in this outbreak was 79.5%. The frequency distribution of cases by sex and age group can be seen in Table 1 and 2.

Table 1. The Frequency Distribution of Cases by Sex

<table>
<thead>
<tr>
<th>Gender</th>
<th>Exposed</th>
<th>Cases</th>
<th>AR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>39</td>
<td>33</td>
<td>84.6</td>
</tr>
<tr>
<td>Females</td>
<td>34</td>
<td>25</td>
<td>73.5</td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
<td>58</td>
<td>79.5</td>
</tr>
</tbody>
</table>

Table 1 showed that the biggest risk of the food poisoning outbreak suffered by males (AR 84.6%). While the Attack rate in females was 73.5%.

Table 2 showed that the biggest risk of the food poisoning outbreak suffered by 0-5 age group or toddler (AR 100%). This number followed by children (6-11 years) and adolescents (12-25 years) with AR 90%, adults (25-45 years) with AR 68.8%, and the elderly (46-65 years) with AR 44.4%. The frequency distribution of cases by symptoms can be seen from Fig.2.

Figure 2. Distribution of Cases Based on Symptoms

Fever was the commonest symptom in 56 cases (96.6%). Dizziness in 53 cases (91.4%), malaise in 50 cases (74.1%), diarrhoea in 43 cases (74.1%), nausea in 42 cases (72.4%), abdominal pain in 39 cases (67.2%), and vomiting in 35 cases (60.3%).

Served food in the event were chicken soup and bottled water. Food such as sticky rice cake filled with chicken shredded (lemper), layered cake (lapis) and apem taken only by orphans who attended the event. Frequency distribution of cases by food items, Attributable Risk (AtR) and the Odds Ratio (OR) can be seen in Table 3. The highest AR and AtR occurred in people who consumed chicken soup (98.3% and 91.6%), followed by bottled water. Based on Odd ratio (OR) value, known that chicken soup and bottled water had the highest OR.
Table 3. The Frequency Distribution of Cases by Food Items

<table>
<thead>
<tr>
<th>Food items</th>
<th>Ate Food Item</th>
<th>Did not eat food item</th>
<th>( p )-value</th>
<th>AtR (%)</th>
<th>OR α 5 %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Ill</td>
<td>AR (%)</td>
<td>Total</td>
<td>Ill</td>
</tr>
<tr>
<td>Chicken Soup</td>
<td>58</td>
<td>57</td>
<td>98,3</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>Lemper</td>
<td>16</td>
<td>6</td>
<td>37,5</td>
<td>57</td>
<td>52</td>
</tr>
<tr>
<td>Lapis cake</td>
<td>25</td>
<td>13</td>
<td>52</td>
<td>48</td>
<td>45</td>
</tr>
<tr>
<td>Apem</td>
<td>19</td>
<td>10</td>
<td>52,6</td>
<td>54</td>
<td>48</td>
</tr>
<tr>
<td>Bottled Water</td>
<td>63</td>
<td>57</td>
<td>90,3</td>
<td>10</td>
<td>1</td>
</tr>
</tbody>
</table>

The epidemiological investigation continued by identification of the pathogens bacteria. Identification of bacteria that can cause poisoning can be seen in Table 4. Based on the symptoms and incubation period, there were 6 bacteria that suspected as the pathogen that may cause food poisoning outbreaks in the village Semelo. The bacteria were *Campylobacter jejuni*, *Cholera*, *Escherichia coli*, *Salmonellosis*, *Shigellosis*, and *Vibrio paraahaemolyticus*.

Chicken soup, lempers, lapis cake, apem and water were served food that may had direct contact with the food handlers. The rectal swabs did on 3 cases. Based on the bacteriological examination results, known that the lempers sample was positive for Escherichia coli, while samples chicken soup, apem and water didn’t contain any pathogenic bacteria.

Based on the examination results of rectal swab on 3 cases, indicated that there was a sample that positive for Salmonella and there was a sample that detected positive for Escherichia coli.

**DISCUSSION**

The poisoning event in the Semelo village was a food poisoning outbreak. This confirmation was based on reports from Bandar Kedung Mulyo PHC stating that there was an increase of cases drastically within the same time and with the same symptoms. These patients also reported had the symptoms after attending the communal event for orphans in Semelo village.

Based on the result about the frequency distribution of cases by sex,
known that the highest risk occurred in males. Attack rate in males was 84.6%, while in females was 73.5%. The high risk in males did not show differences in susceptibility to bacterial pathogens. Food poisoning is not a disease that attacks one particular organ in males or female. Therefore, food poisoning can occur in males and females with random and equal differences (Farmashinta, 2013).

Toddler (0-5 years) have the highest value of Attack Rate (AR 100%). This number followed by children (6-11 years) and adolescents (12-25 years) with AR 90%, adults (25-45 years) with AR 68.8%, and the elderly (46-65 years) with AR 44.4%. The principle is the immune system against pathogens microbial depending on age. Toddler or over 50 years have the higher risk of illness because of the growth of microbial pathogens (Indrati and Gardjito, 2014).

According to WHO (2010), the amount of food consumed per kilogram of body weight of children is higher than adults because children do not only need to maintain homeostasis as practiced by adults, but also growth. If food or liquids are contaminated, children can receive more impact on the ability of their immunity. This statement is supported by Handoyo (2014) which stated that the highest risk of food poisoning was in toddler. Maria et al (2015) also stated that infants and children have pure immune systems that less optimal to fight certain pathogens. Therefore, they are more susceptible from infection. Immunological competence gradually develops through the adaptation against antigens exposure and pathogens.

The identification results for this out-break epidemiological curve shows that the curve formed a common source epidemic (CSE). This form shows an explosion of diseases caused by exposure to a number of people in a group as a whole and it was occurred within a relatively short time (Irianto, 2014). This curve marked by the shape of curve which is like the inverted bell (normal curve), the outbreak period does not exceed the difference between the longest and shortest incubation period of outbreaks etiology (MoH, 2011). This curve indicating that the outbreak occurred by an exposure to the same or a single (WHO, 2008).

Epidemiological investigations against the agent which caused the poisoning continued by knowing the symptoms of cases. Fever was the commonest symptom in 56 cases (96.6%). Dizziness in 53 cases (91.4%), malaise in 50 cases (74.1%), diarrhoea in 43 cases (74.1%), nausea in 42 cases (72.4%), abdominal pain in 39 cases (67.2%), and vomiting in 35 cases (60.3%). The Identification against bacteria that can cause poisoning based on the cases symptoms can be seen in Table 5.

<table>
<thead>
<tr>
<th>No</th>
<th>Symptom</th>
<th>Campylobacter jejuni</th>
<th>Koler</th>
<th>Escherichia coli</th>
<th>Salmonellosis</th>
<th>Shigellosis</th>
<th>Vibrio parahaemolyticus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nausea</td>
<td>-</td>
<td>-</td>
<td>√</td>
<td>√</td>
<td>-</td>
<td>√</td>
</tr>
<tr>
<td>2</td>
<td>Vomitting</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>-</td>
<td>√</td>
</tr>
<tr>
<td>3</td>
<td>Abdominal pain</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>4</td>
<td>Diarrhoea</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>5</td>
<td>Malaise</td>
<td>√</td>
<td>-</td>
<td>√</td>
<td>√</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Fever</td>
<td>√</td>
<td>-</td>
<td>√</td>
<td>√</td>
<td>-</td>
<td>√</td>
</tr>
<tr>
<td>7</td>
<td>Dizziness</td>
<td>√</td>
<td>-</td>
<td>√</td>
<td>-</td>
<td>-</td>
<td>√</td>
</tr>
</tbody>
</table>

Table 5. The Identification Against Pathogen Bacteria that Can Cause Poisoning Based on The Cases Symptoms
The bacteria which can cause the symptoms on cases in this outbreak was *Escherichia coli*. The investigation was also supported by the laboratory results. The result from the rectal swabs on cases showed that there was a positive sample containing the *Escherichia coli*.

These bacteria can be contaminated in the chicken soup. The highest AR and AtR occured in people who consumed chicken soup (98.3% and 91.6%). Moreover, these bacteria can also appear in the water, chicken, and vegetables (BPOM, 2009). Water, chicken, eggs and vegetables such as sprouts and celery were the chicken soup ingredients.

*Escherichia coli* or *E. coli* is one of the gram-negative bacteria. Generally, these bacteria are normally exist in the digestive tract of humans and animals. Its existence outside the human body can be an indicator of sanitary food and drinks which has a contaminated with human feces or not. The existence of *E. coli* in water or food is also considered to have a high correlation with the discovery of germs (pathogens) in food (Arisman, 2009).

Based on the results of investigation, known that the soup consisting of chicken meat. This food has the potential as a media for the growth of *E. coli*. Chicken meat can be contaminated with pathogens as a result of poor water and sanitation for the cutting and processing of chicken meat (Dewantoro, 2009). This statement was also supported by Sasmita et al (2014) which stated that *E. coli* can contaminate chicken meat during processing (especially water use). Ferazsyi et al (2015) note that the chicken claw in the soup from three home meals have a mesophilic aerobic contaminant levels that exceed the maximum contaminant limit standard ISO-2000. It can be caused by inadequate sanitation, the conditions (time or temperature) that is not controlled during the production process or during storage, or a combination of these conditions.

Based on the investigation results, known that the food handlers used the well water to wash and used this as an ingredient of chicken soup. Laboratory results showed that the well water didn’t contain any pathogenic bacteria. So it can be known that the water used was not contaminated with *E. coli*.

Eggs were also the ingredient of chicken soup on this event. The potential growth of bacteria on the egg is supported by Lopez (2013) which stated that *Escherichia coli* can enter and contaminate the egg through the infected hen, feces and the cleaning of eggshell from dirt, packaging system and transport that can lead to cracked or broken eggshell, too long storage, and contaminated surrounding environment.

Raw vegetables such as celery and sprouts were an ingredient of chicken soup. According Puspita et al (2013), vegetables is one of food ingredient that more often contaminated by *E. coli*. Therefore, if in the stage of preparation and processing does not qualify as a vegetable boiling at temperatures did not reach 60°C for 15 minutes, it can be the risk factor of *E. coli* contamination.

The presence of *Escherichia coli* indicates a sign of inadequate sanitation practices because *E. coli* can be moved from hand to mouth activity or passive displacement through food, water, milk and other products. *Escherichia coli* can be found in food or beverages and can cause the symptoms such as cholera, dysentery, gastroenteritis, diarrhea and other gastrointestinal diseases to human body (Kurniadi et al, 2013).

*Escherichia coli* is closely associated with sanitation. This bacterial contamination against the food may occurred in storage, processing until the serving of the food. Yunaenah (2009) stated that there was a significant association between the sanitary quality of food preparation with *E. coli* contamination. This research was also supported by Agustina (2011) which
stated that sanitation tools, sanitary premises, sanitary water and sanitation materials with the presence of *Escherichia coli*.

*Escherichia coli* is also closely related to food handlers. Food handlers are those who directly manage the food. Food handlers have a major role in the prevention of foodborne illnesses. Hygiene factors of food handlers called personal hygiene, is a procedure to maintain the cleanliness of food management (Latudi, 2013). The cleanliness of nails, hands, hair, and clothing are the aspect of personal hygiene that should be known by food handlers. If it is not done correctly, it would facilitate the occurrence of bacterial contamination against foods, especially the foods that processed directly by the food handlers.

Kampunu (2014) stated that the personal hygiene of food handlers is very influential on the presence of *E. coli*. Yunus et al (2015) also stated that *Escherichia coli* contamination was closely related to the personal hygiene of food handlers, food processing plants, waste management, and food storage. The most dominant variable effect on *Escherichia coli* contamination was personal hygiene of food handlers.

**CONCLUSION**

The agent of food poisoning at communal event for orphan in Semelo Village Jombang District based on outbreak period and symptoms was *Escherichia coli* and confirmed by laboratory results. The food that contaminated with E.Coli is the chicken soup. The cases in this village mostly occurred in men and toddlers (0-5 years). Health Office of Jombang District needs to prioritize the food service providers who need to obtain more comprehensive supervision and media campaign that concerning in higine and sanitary of food processing. Health Office should be more intensive in conducting technical assistance for catering services providers and establish the cooperation with the catering services, professional organizations and other relevant agencies as part of efforts to increase the range of the technical guidance.

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FOOD CONSUMPTION AND OBESITY IN STUDENT CLASS XII OF STATE VOCATIONAL HIGH SCHOOL (SMK NEGERI 1) GORONTALO

Muhammad Fazri Tangahu¹, Zuhriana Yusuf², Nasrun Pakaya³

¹,² Gorontalo State University,
³ Student of Doctoral Study, Public Health Faculty, Universitas Airlangga
Email: nsr.pakaya@gmail.com

ABSTRACT

The number of obesity occurrence in the world has been increased for the past decade. The cause can be vary from the internal cause such as genetics, and the external cause such as the habit of over eating or fast food consumption. This research aims at investigating the relationship of fast food consumption and teenager’s obesity at class XII of state vocational high school (SMK Negeri 1) Gorontalo.

This was an analytic survey research using cross sectional approach. The population was the students at class XII of SMK Negeri 1 Gorontalo consists of 197 students. The sample consists of 132 students taken by simple random sampling. The data was analyzed by chi square test. The obesity cases among teenagers at class XII of SMK Negeri 1 Gorontalo occurs in 16 students (12.1%). Fast food consumption often consumed by 74 students (56.1%), and those who rarely consume fast food were 58 students (43.9%). There was a relationship between fast food consumption and the obesity occurs among teenagers at class XII of SMK negeri 1 Gorontalo, with p value=0.024.

It can be concluded that the consumption of fast food can trigger the obesity among teenager. One of the solution to decrease the obesity in the school is to provide health food such as fruits and vegetables in the school canteen.

Keywords: Fast Food, Obesity, Teenagers

INTRODUCTION

Based on data from basic health research (Riskesdas) stated that obesity was 1.4 percent in 2010. There were 11 provinces that had the obesity prevalence above the national level, namely Kepulauan Bangka Belitung, Kepulauan Riau, DKI Jakarta, Jawa Barat, DI Yogyakarta, Jawa Timur, Kalimantan Selatan, Sulawesi Utara, and Gorontalo. There was also an increasing prevalence of obesity among teenagers.

Obesity problem is gradually increasing in Indonesia. It happens due to many reasons, aside from internal factors such as, genetics, external factors such as over eating or excessive consumption of fast food also plays important role in the prevalence of obesity.

Obesity is due to the imbalance proportion of food intake and outtake and lack of optimization of available energy. Fast food eating pattern can accelerate obesity. Studies have proven that a person who consume fast food regularly or more than twice a day in a week will have almost five kilos weight difference than a person who does not consume fast food. Fast food varieties such as, burger, fried chicken, French fries can trigger obesity. This is due to high level of lipid, salt and calories within this type of food (Proverawati, 2010).

Teenagers love to eat fast food because of their taste and their affordable
price. In addition to that, this type of food is easily found, many vendors are selling the variety of fast food, from restaurant, school canteen, even street vendors (Hasdianah, Siyoto, Peristyowati (2014).

Fast food consumption has to balance with the need of the body, otherwise, if people consume fast food and do not exercise, the energy obtained from these foods will be stored as fat in our body that in turn cause obesity (Oetomo, 2011).

The initial observation revealed that there are 254 students with obesity in SMK Negeri 1 Gorontalo that distributed in grade X, XI, and XII. It was also observed that the canteens in this school provide fast food such as instant noodles, sausages, fried stuff and other types of fast food. Following the interview with the students of SMK Negeri 1 Gorontalo, which was conducted on the seventeenth of September 2014, it was revealed that they prefer to buy fast food such as meatball noodles, instant noodles, snacks and soft drinks that contains very high calories than consuming fruit and vegetables that are rich with fiber. In addition, they consider fast food to be tastier, can be easily found, and the price are affordable, hence, it becomes necessary to be consumed daily. Even, it is not hard for students to order fast food from restaurants, because many of the food vendors now provide delivery order, thus there is no need to come in person to the restaurant. The food delivery system delivers food to students, any time anywhere.

**MATERIAL & METHODS**

This research was conducted at SMK Negeri 1 Gorontalo during December 2014. This research was analytical survey with cross sectional approach, where the data were obtained at the same time. The independent variable in this research was fast food consumption and the dependent variable was obesity. The population of this research were grade XII accounting students accounted for 197 students that comprises of 119 female students and 78 male students.

The random sampling technique is used in this research. The sample criteria are mention as follow: 1) Inclusion criteria: grade XII students enrolled in SMK Negeri 1 of Gorontalo city, age between 16 to 19 years old, and volunteered to be respondent; 2) Exclusion criteria: grade XII students of SMK Negeri 1 Gorontalo who were absent during the research and those who were in but decided not to volunteer as respondents.

The fast food data consumed by students were obtained through direct interview with the respondents using questionnaire. Fast food is often consumed in the form of fried foods, fried noodles and fried rice. While rarely consumed is spagethi and pizza.

The anthropometry data were collected anthropometry measurement toward all the respondents using microtoise to measure the height (cm) with 0.1 cm precision and bathroom scales with 0.5 kg precision that were previously validated. The result then converted into Body Mass Index. The BMI is obtained through body weight divided by body height squares

Bivariate analysis is an analysis of independent variable to find the correlation with dependent variable. The analysis uses cross tabulation. To test the hypothesis, analytical statistic was conducted using the Chi Square formula in the significance level of 0.05.

**RESULTS**

The population of this research was grade XII students from Accounting 1, Accounting 2, Accounting 3, Office Administration 1, Office Administration 2,
Office Administration 3 of SMK Negeri 1 Gorontalo that accounted for 132 students.

Table 1. Characteristics of Respondents based on Sex of Grade XII students of SMK Negeri 1 Gorontalo

<table>
<thead>
<tr>
<th>Sex</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>45</td>
<td>34.1</td>
</tr>
<tr>
<td>Female</td>
<td>87</td>
<td>65.9</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Primary Data

Table 1 shows that the majority respondents are female.

Table 2. Characteristics of Respondents based on Age of Grade XII students of SMK Negeri 1 Gorontalo

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 Years Old</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>16 Years Old</td>
<td>16</td>
<td>12.1</td>
</tr>
<tr>
<td>17 Years Old</td>
<td>93</td>
<td>70.5</td>
</tr>
<tr>
<td>18 Years Old</td>
<td>21</td>
<td>15.9</td>
</tr>
<tr>
<td>19 Years Old</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Primary Data

Table 2 above shows that the majority respondents were 17 years old.

Table 3. Distribution of Respondents based on their consumption of fast food at Grade XII Students of SMK Negeri 1 Gorontalo

<table>
<thead>
<tr>
<th>Fast food consumption</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Often</td>
<td>74</td>
<td>56.1</td>
</tr>
<tr>
<td>Rarely</td>
<td>58</td>
<td>43.9</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Primary Data

Table 3 shows that there is the majority respondents consumption of fast food is often.

Table 4 shows that weight distribution in grade XII students are normal.

Table 4. Respondents distribution based on Obesity at grade XII Students of SMK Negeri 1 Gorontalo

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>103</td>
<td>78</td>
</tr>
<tr>
<td>Pre Obesity</td>
<td>13</td>
<td>9.8</td>
</tr>
<tr>
<td>Obesity</td>
<td>16</td>
<td>12.1</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Primary Data

Table 5. Correlation of Fast Food Consumption with Obesity in Teenagers at Grade XII Students of SMK Negeri 1 Gorontalo

<table>
<thead>
<tr>
<th>Fast Food Consumption</th>
<th>Obesity</th>
<th>Total</th>
<th>χ²</th>
<th>p=0.024</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal</td>
<td>Pre Obesity</td>
<td>Obesity</td>
<td>n</td>
</tr>
<tr>
<td>Often</td>
<td>54</td>
<td>40.9</td>
<td>6</td>
<td>4.5</td>
</tr>
<tr>
<td>Rarely</td>
<td>49</td>
<td>57.1</td>
<td>7</td>
<td>5.3</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>78.0</td>
<td>13</td>
<td>9.8</td>
</tr>
</tbody>
</table>

Source Primary Data

Table 5 above shows that there is the respondents that often consume fast food with pre obesity category were only 6 respondents compared to those that rarely consume fast food but are within the pre obesity category that accounts for 7 respondents. Based on the research there are 7 respondents who rarely consume fast food but are within the preobesity category. The instrument of the research reveals that there are 2 items in the questionnaire which only scores 17 or only two score higher than the lowest score that is 15. This indicates that the preobesity respondents do not really like fast food.

The Chi square reveals that the p value=0.024, therefore, it is concluded that there was a correlation between consumption of fast food and obesity in grade XII students of SMK Negeri 1 Gorontalo.

DISCUSSION

The research result in table 4.3 reveals that large proportion of the respondents (74
students or 56.1%) often consumed the fast food and the rest 58 students (43.9%) rarely consumed fast food. This research revealed that the most consumed fast foods were fried food and fried instant noodles, whereas, pizza and spaghetti were rarely consumed by respondents. The interview with the respondents revealed that the habit to consume fast food was not only conducted in school, but also at home such as consuming instant noodles and other fast food like siomay and fried food as the alternative food to cease the hungry feeling.

The researcher assumes that fast food such as fried stuffs and instant noodles were often consumed by respondents because they are largely available and affordable. Fried stuffs such as bakwan is often combine with rice consumption as substitute to side dishes. Types of fast food such as fried foods are often consumed along with rice as a carbohydrate enhancer. This can lead to weight gain due to excessive carbohydrates that can cause obesity. This in accordance to the theory which states that consumption of instant noodles that are too often is not good for health. Instant noodles cannot substitute the nutrition needed by our body that can only be provided by intake of basic meal. Instant noodle samples with additions Spice there are two types of free radicals that is type O2 with a factor value of 1.7167 g, and with a factor value of 1.7673 g. The content is carcinogenic (Pahlevi, Juswono, Widodo, 2014). In addition to that, the spices in instant noodles also contain harmful substances such as monosodium glutamate (MSG) that has been proven to trigger cancer. Some countries have gone to the degree of prohibiting this substance to be mixed with food.

Table 4.2 reveals that there were 16 (12.1%) students suffer from obesity. I assume that the obesity is due to several factors such as genetic factor and less healthy life style. This research revealed that there were 5 respondents with obese parents, which may indicate that their obesity is due to genetic factor. This is supported which stated that obesity tend to be genetically passed down. However, family members are not only share genetic but also food and life style that can encourage obesity. It is often hard to separate lifestyle factor and genetic factor. Research shows that genetic factor contributes 33% to one’s body weight (Proverawati, 2010).

In addition to genetic factor, it is also assumed that obesity experienced by the respondents are due to less healthy lifestyle. Respondents often consume high calories and fatty meals without sufficient exercise to balance the calories intake. Based on interviews with obese respondents that there are 4 respondents have a habit of eating at night before bedtime and less to do sports activities. therefore, the calories accumulates into fat that causes obesity.

This is in line with the Hasdianah, Siyoto and Peristyowati (2014), which state that in addition to genetic factor and hormonal factor, the root cause of obesity is the body that receives more calories than what it is capable to burn. The calories then accumulate into fat.

According to Freitag (2010) which states that obesity is due to the unbalance energy for a long time, that is the energy that are released is less than the energy that is consumed. The imbalance of calories intake and calories released can be due to many factors. Body over weight and obesity are not only due to bad eating pattern. This is also related to interactions of many factors such as genetic, metabolic, behavior, and environmental factors.

The research conducted at SMK Negeri 1 Gorontalo as presented in table 4.5 shows that respondents that often consume fast food with normal body weight were 54 students, larger than the proportion of those who rarely consume fast food that are only 49 respondents. I assume that the respondents with preobesity category are not due to fast food consumption but rather due to genetic factor and less physical activity.

The research revealed that obese respondents often consume fast food by more than 66%. Even, the research reveals that out of these 16 respondents there are only 4 respondents that do not consume the fried chicken twice to seven times a week. This
showed that the obese respondents more often consume fast food. The type of fast food that often consumed were fried stuffs and French fries, whereas, pizza and spaghetti are less consumed fast food.

Fried stuffs were food that often consumed by the respondents, because these types of food are widely available. Even, the school canteen sells many types of these fried foods. Meanwhile, spaghetti, sausages and pizza were rarely consumed by the obese respondents because they are not available in school canteen and the price are also quite expensive, hence, students were not prefer to buy it.

This research revealed that the obesity proportion was higher in teenagers that often consume fast food by 10.6% than teenagers that rarely consumed fast food with only 1.5%. The chi square analysis revealed that there was a correlation of fast food consumption and the obesity in teenagers at grade XII students of SMK Negeri 1 Gorontalo with the p value =0.024.

Correlation between fast food consumption and obesity is supported by Proverawati (2010) which stated that fast food such as, hamburger, fried chicken and French fries can cause obesity in a short time due to the high lipid content of these types of food. This is also in agreement with Freitag (2010) who stated that within fast food there are high content of calories, fat and simple glucose that can increase the risk of being overweight even obesity.

Misnadiarly (2010) also intone that consumption of high calories meal such as fast food, grilled food, and snacks plays role in increasing of body weight. Fatty food is often high in calories and nd these types of food are often high in calories, sugar, or salt. Obesity happens due to interaction of many factors for a long period. Obesity does not happen instantly, but rather as a consequence of one’s habit for a long time. When someone often consumes fast food in excessive amount, the calories will accumulate in the body of that person. This will be a problem if this high calory intake is not balanced with exercise to get rid of those calories. The accumulate calories can cause obesity.

Teenagers are generally unaware of the change in their body shape because obesity can happen very slowly. Obesity will not happen in one or two days after consumption of fast food, hence individual awareness is needed to control the food intake.

**CONCLUSION**

I can be concluded that: 1) the prevalence of obesity in grade XII students of SMK Negeri 1 Gorontalo is 16 people (12.1%); 2) 74 students (56.1%) of grade XII of SMK Negeri 1 Gorontalo often consume fast food and 58 students (43.9%) rarely consume fast food; and 3) statistics analysis reveals the p value=0.024<0.05 which indicates that there is a correlation between consumption of fast food and obesity in teenagers of grade XII at SMK Negeri 1 Gorontalo.

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Radikal Bebas Pada Mie Instan, Brawijaya Malang.
ANALYSIS OF AMMONIA (NH₃) EMISSIONS TREATMENT IN FACTORY PRODUCTION I PT. PETROKIMIA GRESIK

PrehatinTrirahayu Ningrum¹, Rokhmanita Ulfah², Meritia Ardyati³

¹, ²Department Environmental Health and Occupational Health, Faculty of Public Health, University of Jember
³Unit of Environmental Health, PT. Petrokimia Gresik

Email: harumfkm@gmail.com

ABSTRACT

Ammonia (NH₃) occurs naturally in low concentrations in areas that are not polluted. At higher concentrations, it would poison aquatic organisms present in a large scale. Toxicity of unionized ammonia will be higher if the low temperature and high pH. Ammonia concentration above 0.11 mg /L would pose a risk of growth disturbance in all species of marine fish, marine plants for the concentration of ammonia at 25 micromoles per liter causes of death. The purpose of this study is to describe the quality of emissions of ammonia (NH₃) in the exhaust stack emissions of ammonia (NH₃) in the factory unit I PT. Petrokimia Gresik, and to describe the effectiveness of ammonia emissions treatment in unit Factory I PT. Petrokimia Gresik. The variable of study was quality of ammonia emissions and the effectiveness of ammonia emission treatment. This study was descriptive, using the method of observation. The result showed that the concentration of NH₃ per month was still below the quality standard of the Environment. Their emissions scrubber system, especially in the processing of NH₃ gas in Urea Plant to reduce concentrations of NH₃ are released in the air, so that the ambient air quality is maintained and does not cause negative effects to health and the environment in residential PT. Petrokimia Gresik.

Keywords: Treatment, Ammonia (NH₃), Emissions

INTRODUCTION

PT. Petrokimia Gresik (PG) is a company status State Owned Enterprises (SOE) within the Ministry of Industry and Trade is engaged in the production of fertilizers, production materials using chemicals (H₂SO₄, H₂PO₄, CO₂, etc.) and production systems that use heavy machinery. PT. PKG is the second oldest fertilizer plants in Indonesia after PT. Pupuk Sriwijaya (PUSRI) in Palembang and also a complete fertilizer plant among other fertilizer plant. PT. PKG has three (3) location of the plant, namely Plant I, Plant II and Plant III. Each of the factories have the production process and produce different products. Factory I (nitrogen fertilizer plant) to produce Ammonia, ZA I & III, Urea, CO₂, Dry Ice and Utility. Factory II (Phosphate fertilizer plants) produce SP-36 1 & 2, Phonska, Tankyard Ammonia and Phosphate. While Factory III (Phosphoric Acid Factory) produces sulfuric acid, acid phosphate (H₃PO₄), Aluminium Floride (AlF₃), Cement Retarder and ZA II.

Ammonia occurs naturally in low concentrations in areas that are not polluted. Ammonia occurs naturally in low concentrations in areas that are not polluted. At higher concentrations, it would poison aquatic organisms present in a large scale. Fish are the most sensitive species of ammonia concentration shifting in the waters. Water solution is in the form
of ionized ammonia (NH₄⁺) or non-ionized (NH₃). Relative concentration of each type depends on several factors such as pH and temperature. Toxicity of unionized ammonia will be higher if the low temperature and high pH. Ammonia concentration above 0.11 mg / L would pose a risk of growth disruption on all species of marine fish, marine plants concentration of ammonia at 25 micromoles per liter causes of death (Riwayati, 2010).

According to the East Java Governor Regulation No. 10 of 2009 stated that the ammonia emission limit value of 500 mg / m³. According to the survey conducted in the factory unit I PT. Petrochemicals showed that the measurement of ammonia emissions on the environment Production Unit I PT. Petrochemicals conducted over three months which is done by the Laboratory of Chemistry Department of Process and Energy Control PT. PKG. According to the results of air emission quality measurements by Technical Implementation Unit Occupational Health and Safety (K3 UPT) in the chimney saturator ZA III 06 - E 301 A in April 2015 was 0.82, in August 2015 amounted to 213, and in December 2015 amounted to 147.9. From the value of the measurement results, it can be concluded that processing result of emissions of ammonia done by Production Unit reduce the levels of ammonia in the air effectively.

The measurement results showed that ammonia emissions is in accordance to environmental quality standard below 400 mg / m³ or ammonia emissions controlling in Production Unit I is quite effective. However, according to the survey conducted to the community indicated that there were community concern and public complaints related to the smell of ammonia. The spared of ammonia odor in the air can be effected by several factors, emitted, the atmospheric conditions, the distribution of wind, relative humidity, and the presence of a leak in the pipeline processing of ammonia at the plant unit I PT. PKG. If this is not manage properly, it would have an impact on public health and air quality deterioration around the factory PT. PKG. Ammonia in gaseous form is irritating to skin, eyes and respiratory tract. If it is inhaled, it will irritate the nose, throat and mucous tissue. Irritations can be induce of the concentration from 130 ppm to 200 ppm. At a concentration of 400-700 ppm can result in permanent damage due to irritation of the eyes and respiratory system Brief exposure tolerance has the maximum concentration of 300-500 ppm for half to one hour. Exposure to concentrations of 5000-10000 ppm can cause death (Bridgend & Stringer, 2000).

MATERIAL AND METHOD

This design of this research was descriptive quantitative study. The population of this study was all the workers who are in a stone quarry dishes as well as make the sample as much as 33 respondents. The purpose of this study was to describe the quality of emissions of ammonia (NH₃) in the exhaust stack emissions of ammonia (NH₃) in the factory unit I PT. PetrokimiaGresik, and to describe the effectiveness of ammonia emissions treatment in unit Factory I PT. Petrokimia Gresik. The variable of study was quality of ammonia emissions and the effectiveness of ammonia emission treatment. This study was descriptive, using the method of observation. The data was analyzed descriptively and presented in table.

RESULT

Quality Emission Ammonia in the factory I

Based on the test data quality emissions of ammonia production unit I carried out by the Technical Implementation Unit Occupational Health
and Safety (UPT K3) in chimney I saturatorZA 03 - E301 A, saturator ZA III 06 - E 301 A, chimneyprilling tower and stack Dryer carried out on April, August and December 2015 revealed the following results:

1. Chimney Saturator ZA I 03-E 301 A
   Based on Quality Measurement Results table 4.2 Ammonia Emissions in Chimney Saturator ZA I 03 - E 301 A was conducted in April, August and December 2015 to get results with the average of April 267 with a wind speed of 1.1 to 2.9 m/s wind direction to the south, in August 69.4 with wind speeds of 0.9 to 3.9 m/s wind direction towards the East, and in December at 16.77 with the of direction the wind speed of 0.98 to 2.88 m/sec wind direction to the Southeast.

2. Chimney Saturator ZA III 06-E 301 A
   Based on Quality Measurement Results table 4.3 Ammonia Emissions in Chimney Saturator ZA III 06-E 301 A which carried on April, August and 2015 December showed an average of 0.82 in April with wind speed of 1.1 to 4.3 m/s wind direction to the south, in August 213 with a wind speed of 1.1- 2.8 m/s wind direction to the East, and in December amounted to 146.9 with the speed of 0.67 to 2.51 m/sec and wind direction to the Southeast.

3. Stack Dryer ZA I 01-D 303
   Based on Quality Measurement Results table 5 Indicated ammonia Emissions in Stack Dryer ZA I 01-D 303 conducted in April, August and December 2015 had an average of 1.61 in April with wind speed of 1.2 to 3.2 m/s direction the wind to south, in August 18.4 with wind speeds of 1.2 to 3.9 m/s direction wind towards the East, and in December at 155.83 with the direction of the wind speed of 0.67 to 2.51 m/s wind direction in Southeast.

4. Stack Dryer ZA III 06-D 303
   Based Quality Measurement Results table 5 Indicated ammonia Emissions in Stack ZA Dryer III 06-D 303 conducted in April, August and December 2015 had an average of 0.36 in April with wind speed of 1.2 to 3.2 m/s direction the wind to South; 65.9 in August with wind speeds of 1.3 to 4.6 m/s direction wind towards the East, and in December amounted to 155.7 with the direction of the wind speed of 0.82 to 2.71 m/s wind direction to the Southeast.

5. Prilling Tower Chimney GB 301 B
   Based on table 5 Ammonia Emissions Quality Measurement Result in 301 GB prilling Tower B conducted in April, August and December 2015 to get results with an average of 95.8 in April with a wind speed of 1.9 to 3.4 m/s wind direction to the North, in August 2.08 with a wind speed of 0.6-2.6 m/s wind direction to the east, and in December at 155.73 with the direction of the wind speed of 0.78 to 2.97 m/s wind direction to North West.

---

### Table 1. Ammonia Emissions Quality Measurement Results in the chimney Saturator ZA I 03-E 301 A

<table>
<thead>
<tr>
<th>No</th>
<th>Date / Month / year</th>
<th>Unit</th>
<th>Measurable levels</th>
<th>Speed</th>
<th>Wind direction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>02 Apr 2015</td>
<td>mgr/Nm3</td>
<td>351</td>
<td>356</td>
<td>94,62</td>
</tr>
<tr>
<td>2</td>
<td>05 Augst 2015</td>
<td>mgr/Nm3</td>
<td>64,4</td>
<td>69,1</td>
<td>74,1</td>
</tr>
<tr>
<td>3</td>
<td>02 Des2015</td>
<td>mgr/Nm3</td>
<td>157</td>
<td>138,9</td>
<td>144,4</td>
</tr>
</tbody>
</table>
Table 2. Ammonia emissions quality Measurement Results in flue Saturator ZA III 06-E 301 A

<table>
<thead>
<tr>
<th>No</th>
<th>Date / Month / year</th>
<th>Unit</th>
<th>Measurable levels</th>
<th>Speed Wind direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2-april-2015</td>
<td>mgr/Nm³</td>
<td>0.86 0.60 1.00</td>
<td>1.1-1.43m/deg South</td>
</tr>
<tr>
<td>2</td>
<td>2-agust-2015</td>
<td>mgr/Nm³</td>
<td>205 202 231</td>
<td>1.1-2.8m/deg East</td>
</tr>
<tr>
<td>3</td>
<td>2-des-2015</td>
<td>mgr/Nm³</td>
<td>147.9 139.8 156</td>
<td>0.67-2.51m/deg Southeast</td>
</tr>
</tbody>
</table>

Table 3. Result Ammonia quality Measurement emissions in Stack Dryer ZA I 01-D 303

<table>
<thead>
<tr>
<th>No</th>
<th>Date / Month / year</th>
<th>Unit</th>
<th>Measurable levels</th>
<th>Speed Wind direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2-april-2015</td>
<td>mgr/Nm³</td>
<td>1.66 1.88 1.29</td>
<td>1.2-3.2 m/deg South</td>
</tr>
<tr>
<td>2</td>
<td>2-agust-2015</td>
<td>mgr/Nm³</td>
<td>18.4 19.6 17.1</td>
<td>1.2-3.9 m/deg East</td>
</tr>
<tr>
<td>3</td>
<td>2-des-2015</td>
<td>mgr/Nm³</td>
<td>18.4 152 172 155.83</td>
<td>0.67-2.51 m/deg Southeast</td>
</tr>
</tbody>
</table>

Table 4. Ammonia emissions Quality Measurement Result in Stack ZA Drayer III 06-D 303

<table>
<thead>
<tr>
<th>No</th>
<th>Date / Month / year</th>
<th>Unit</th>
<th>Measurable levels</th>
<th>Speed Wind direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>02 Apr 2015</td>
<td>mgr/Nm³</td>
<td>0.52 0.27 0.28</td>
<td>1.2-3.2 m/deg South</td>
</tr>
<tr>
<td>2</td>
<td>05 Agst 2015</td>
<td>mgr/Nm³</td>
<td>60.9 63.6 73.0</td>
<td>1.3-4.6 m/deg East</td>
</tr>
<tr>
<td>3</td>
<td>02 Des2015</td>
<td>mgr/Nm³</td>
<td>143.5 152.4 171.2</td>
<td>0.82-2.71 m/deg Southeast</td>
</tr>
</tbody>
</table>

Table 5. Ammonia Emissions Quality Measurement Result in Cehimney Prilling Tower GB 301 B

<table>
<thead>
<tr>
<th>No</th>
<th>Date / Month / year</th>
<th>Unit</th>
<th>Measurable levels</th>
<th>Speed Wind direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01 Apr 2015</td>
<td>mgr/Nm³</td>
<td>68.1 110 109</td>
<td>1.9-3.4 m/deg South</td>
</tr>
<tr>
<td>2</td>
<td>05 Agst 2015</td>
<td>mgr/Nm³</td>
<td>2.30 1.73 2.21</td>
<td>0.6-2.6 m/deg East</td>
</tr>
<tr>
<td>3</td>
<td>01 Des2015</td>
<td>mgr/Nm³</td>
<td>154.3 145.7 167.2</td>
<td>0.78-2.97 m/deg Southeast</td>
</tr>
</tbody>
</table>

DISCUSSION

Ammonia Emissions Management Effectiveness

PT. Petrokimia Gresik in the fertilizer production process produces waste in the form of ammonia gas that include to a heavy metal group. Ammonia gas before it is discharged into the environment is managed properly so that it do not bring negative impact on the environment and surrounding communities. PT. PKG pass the management of ammonia emissions using Dust Scrubbing system. Scrubber can be defined as means of separating asolid particles (dust) in the air using the gas or liquid as atool. Water is a liquid that is generally used in the process of scrubbing.

Scrubbing dust system is mounted on the top of the prilling tower to pick up dust in the area of cooling air. Molten urea at a concentration of 99.7% by weight (including biuret) droplets in a prilling tower as granules after missed strainer and head tank at the top tower and is injected into the distributor-type "acoustic granulator". To keep biuret formation to a minimum, the system should be designed and operated with the intention of molten urea temperature is maintained slightly above the melting point of urea (132.7°C) and also to maintain a residence time as short as possible. Molten urea from the head tank is distribute evenly to the distributor. When it reach the tower, granular urea in contact with the air rises, so the cooling and solidification is achieved before fluidizing cooler at the bottom tower. Urea prill perfectly cooled with air conditioning that put fluidizing bed of fluidizing cooler. Urea prills are
collected and cooled in a cooler at the fludizing bottom tower and over flow into the trammel to be separated from over sized urea prill. Over sized urea is dissolved with a solution of a dust chamber in the dissolving tank.

Product of urea prill is sent to the belt scale for weighing and then it sent to battery limit. Hot air from the prilling tower containing urea dust in the treatment of post dust recovery system. Spray nozzles and packed bed installed for air scrubbing. Then air is discharged into the atmosphere by the induced fan to prilling tower after droplets of scrubbing section reduced is by a demister.

![Figure 1. Dust circulation pump](image)

**Part of Prilling Tower**

Dust circulation pump for recovery mounted on top of tower for circulating the urea solution from the sump to the packed bed for dust recovery. The concentration of urea solution is maintained ± 20% by weight by setting the amount of water intake. Over flow pipes for the dissolving tank is installed to keep the solution sump. Finally urea dust emissions in the exhaust air of the tower is 30 mg/Nm³ or less where the air meets solution pollution regulations *dircycle recovery urea to the urea solution*.

Scrubber system is an effective tool that to reduce the content of ammonia in the gas. This can happen because ammonia is highly soluble in water, effectiveness of the ammonia content of the gas is influenced by the water used in the scrubber system. Duration in the scrubber system, and the content level of ammonia in the waste gas. If the water used in the scrubber system in a state of saturation, the water functions can not optimally work. The longer the ammonia gas in the scrubber system, the lower the content of ammonia in the gas, it is because the conditions in the scrubber system tends to damp the particles in the gas bound by water droplets so that particles with a separate gas. If this situation is repeated constantly in the scrubber system then it will decrease the ammonia gas levels to be more leverage. High or low content of ammonia in the gas also affects the effectiveness of decreased levels of ammonia in the gas.

**CONCLUSION**

Based on the analysis of the measured data the concentration of NH3 in air emissions released in the production process can be concluded that the concentration of NH3 per month is still below the quality standard which has been established by the Governor Regulation No. 10 in 2009 that is equal to 1360 μm/Nm. Their emissions scrubber in the processing of system, especially NH3 as in Urea Plant can reduce the concentration of released NH3 in the air, so that the ambient air quality is maintained and does not cause negative effects to health and the environment in residential. PT. Petrokimia Gresik should be carried out maintenance and checking of the air control device in a production machine regularly.

**REFERENCES**

2009 tentang Baku Mutu udara ambient dan sumber emisi tidak bergerak di Jawa Timur.


HYGIENE SANITATION AND MICROBIOLOGICAL QUALITY OF FOOD AT STUDENT CANTEEN

Aini Azizah\textsuperscript{1} and Retno Adriyani\textsuperscript{2}

\textsuperscript{1} Undergraduate student of Public Health Program, Universitas Airlangga
\textsuperscript{2} Doctoral student of Health Science Program, Universitas Airlangga

retnoadriyani@fkm.unair.ac.id

ABSTRACT

One of central activities in campus is canteen. Food safety in canteen is important to prevent the food intoxication and food borne disease. The important factors on food safety are hygiene and sanitation of canteen. Canteen hygiene and sanitation consist of several aspects, such as building, sanitation facilities, tools, food and food handlers’ hygiene. The aim of this study were identify hygiene and sanitation condition and food bacteriology quality in Faculty of Public Health Canteen, Universitas Airlangga. This was an observational study with cross sectional approach. The sample unit was canteen stand and total population sampling technique was used. There were 6 canteen stalls in Public Health Faculty canteen. The information about food handlers’ personal hygiene was collected by interview using a structured questionnaire. The canteen stalls sanitation was observed using observational sheet based on Indonesian Ministerial of Health Decree No. 1098/2003 of Sanitation Hygiene Requirements for Eating Places and Restaurants. Microbiological quality of food was tested in laboratory by identification of the presence of salmonella in food samples. The results showed that hygiene sanitation condition score had accomplished the standard (>70%). The observation indicated that for the building condition were 90%, sanitation facilities were 79%, equipment sanitation were 88.9%, food were 96%, and food handlers’ hygiene were 98%. There was no \textit{Salmonella} sp. found in food samples. Sanitation facilities of student’s canteen of Public Health Faculty should be improved and maintained in daily basis. The canteen should be certified by Surabaya District of Health Office as the competent institution.

Keywords: canteen, hygiene sanitation, microbiological quality of food

INTRODUCTION

Faculty of Public Health Universitas Airlangga has canteen facility that provide variety of food and beverage. This canteen has a lot of visitors especially students. This canteen is located in Kampus C Universitas Airlangga, in addition, there are other canteens at Faculty of Science and Technology, Faculty of Nursing, Faculty of Veterinary, Faculty of Fisheries and Marine, and Dharmawanita, with 27 stall of canteen.

In a previous study, microbiological quality of food was observed at many Kampus C Universitas Airlangga canteen. It was found the presence of E coli and coliform in food samples (Anggi, 2011). Studies have shown that an appreciable percentage of foodborne illness cases can be attributed to poor sanitation and food hygiene, including poor personal hygiene and contamination of equipment and/or environments.

Food safety is a scientific discipline describing handling, preparation, and storage of food to prevent foodborne
diseases. This includes a number of routines that should be followed to avoid potentially severe health hazards. Sanitation effort is maintaining a clean work environment in preventing foodborne diseases. Bacteria grows on unsanitary surfaces and then contaminate food. Ensure the cleanliness and sanitizing work area before starting to prepare food. One of the basic principles is to break the cycle by avoiding cross-contamination, which can be achieved by ensuring personal hygiene practices (Vieira, 1996).

Sanitation and hygiene aspects consist of building, sanitation facilities, equipment, food and food handlers’ hygiene. Refers to Indonesian Ministerial of Health Decree No. 1098/2003 of Sanitation Hygiene Requirements for Eating Places and Restaurants building condition consist of location, yard, floor, wall and ceiling, doors, lighting, ventilation, and food processing areas. While, sanitation facilities consist of water supply, waste water disposal, hand washing facilities and waste disposal. Equipment must be taking care since cleaning to maintenance. Food handling from raw material until ready to eat must be considered. Sanitation and hygiene can prevent the foodborne diseases by avoiding the food contamination including micro organism such as bacteria (National Research Council (US) Subcommittee on Microbiological Criteria, 1985).

Bacteria are present in many of the foods we eat and the body itself. Most bacteria are not harmful, and some are even very beneficial to people, but some types of bacteria are pathogenic and can cause illness. Campylobacter, E.coli, Listeria, and Salmonella are examples of pathogenic bacteria (WHO, 2008).

Food borne disease still a challenge for public health experts in the world. Pathogenic bacteria can be mutated, produce new level of pathogenicity, increasing of antibiotic resistance to the bacteria and changes of microorganism (WHO, 2008).

The presence of Salmonella sp. in food depend on the raw material, equipment, water, and sanitation practice (Marriot, et.al, 2006). Salmonella sp. is pathogenic bacteria that easy to find in food. Mirawati, et al. (2014) found 35,7% of street food in Pondok Gede, Jakarta was contaminated with Salmonella sp. Therefore, one of the effort to reduce the contamination of this bacteria is hygiene and sanitation.

Volard (2004) found that the risk factors of typhoid fever are buy outside food. Some food stall has limited sanitation facility and lower standard of food’s sanitation hygiene.

The aim of this study was to identify hygiene and sanitation condition and food bacteriology quality in Faculty of Public Health Canteen, Universitas Airlangga.

**METHODS**

This was an observational study with cross sectional approach on the canteen of Faculty of Public Health Universitas Airlangga Surabaya. Study started on from January to June 2016. The sample unit were canteen stalls. Total population sampling technique was used. There were 6 canteen stalls in Public Health Faculty canteen. The information about food handlers’ personal hygiene was collected by interview with a structured questionnaire. The observation of each stalls canteen sanitation were done using observational sheet based on standard Indonesian Ministerial of Health Decree No. 1098/2003 about Sanitation Hygiene Requirements for Eating Places and Restaurants. Microbiological quality of food was tested in laboratory by identification of the presence of salmonella in food samples. Research finding presented descriptively in tables and narration of the data.
RESULTS

The canteen at Faculty of Public Health was an open spaced building. This open building only has separation wall on its back side meanwhile the front space directly side by side with the dining corridor. This canteen consists of 6 stall, where the owners had to lease from faculty and selling their food and beverage based on the agreement with the faculty. The faculty provide sanitation facilities but did not include daily maintain activities. The owner of canteen must keep the canteen area clean. The food were varies, from traditional to fast food. The owner of stall allowed cook at food processing area.

Canteen Buildings

The observed aspects were conditions and hygiene of location, yard, floor, wall, ceiling, food processing room, ventilation and lighting. Canteen buildings score were 90% meet the standard criteria. Canteen’s yard layered by paving, sometimes the condition was clean, tidy and dry. The floor was tiled, clean, dry and well-maintained. The walls and ceilings were clean of dust and cobwebs. The canteen used natural lighting. Canteen were open space, air circulation was fair enough for dry season. At rainy season the humidity was high, especially when the weather was cloudy. Sometimes there were many flies. Food processing room was in a clean condition.

Sanitation Facilities

Sanitation facilities aspects were condition of water supply, waste water, hand washing facilities, and handling of solid waste. The sanitation facilities score were 79% meet the criteria. Clean water source was from tap water. Clean water was sufficient enough, as food handlers also used as backup stored water. Wastewater mainly was form washing cookware and equipment. Sewerage was open channel, and it had a good flow. There were 2 wash basins available for consumers and a junk was available in each stall for washing the equipment and hands for food handlers’. Garbage bin available for each stall and the dining areas in sufficient amount. Every stall must be tidy and clean, but it was not supervised regularly by the canteen manager.

Cookware and equipment

The observed aspects for cookware and equipment were the washing process, storage and maintenance. The score was 88,9% meet the standard. The washing steps included the removal of food residue, washing with soap, rinsing and drying with water from tap. There was no stall using bucket for soaking the cookware.

Container pots and dishes washed well done, but not stored in sealed containers. After washed, the cookware stored in storage place. Some stall used the drying place as storage too. The equipments has been used as their functions.

Although there was no special place for tenant stall to store their cooking ware and equipment, they had been store their equipment in clean and tidy ways.

Food sanitation and microbiological quality

The groceries were selected and processed in the same day. There were no storage for raw materials. After cooked, the food was stored in showcase. There was no Salmonella sp. found in food samples. The score of food sanitation aspect were 96%.

Table 1. Food handler’s personal hygiene in Faculty of Public Health Canteen Universitas Airlangga, 2016

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of uniform</td>
<td>5</td>
<td>83,3</td>
</tr>
<tr>
<td>Use of apron</td>
<td>1</td>
<td>16,7</td>
</tr>
<tr>
<td>Use of headgear</td>
<td>3</td>
<td>50,0</td>
</tr>
<tr>
<td>Use of gloves</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Use of jewelry</td>
<td>3</td>
<td>50,0</td>
</tr>
</tbody>
</table>
The food handler’s personal hygiene score were 98% meet the standards. Table 1, showed that all of food handler used different spoon for tasting the food when they were cooking and always washing their hands before handle the food and groceries.

**DISCUSSION**

Canteen building aspect that should be improved was air circulation. Wind direction ensured that no contaminants from the source of pollution that can be carried by the wind (Lelieveld *et al.*, 2005). Ensuring sufficient fan probably make good condition of humidity and air circulation.

The tenants have to keep the canteen’s courtyard, dining room and building always in clean condition. The visitors should maintain the cleanliness too. Hygiene education poster and a janitor supervised by canteens manager is strongly recommended.

According to Ministerial of Health Decree No. 1098/2003 about Sanitation Hygiene Requirements for Eating Places and Restaurants, courtyard should be clean, no puddles, no shrub has become a vector breeding place. The floor should be tiled, flat, no crack, not slippery and easy to clean. Wall and ceiling must be flat, dry, easy to clean and wet area wall should be tiled. Lighting should be sufficient, no poor lighting or glare. Hand washing basin provided in sufficient amount, in a good condition, comfortable, clean, with soap and hand dryer included.

Food processing area in the canteen was also semi closed building. Ideally, food processing area should be indoor equipped with a hood. Area in door can minimized air pollution from outside, such as dust, flies and bacteria (Anggi, 2011 & Hutagalung, 2014).

Although the waste water from canteen activity did not become a breeding places for vector, it is better if it has grease trap units. A grease trap is a device designed to intercept most greases and solids before they enter a wastewater disposal system. All restaurants, caterers, school cafeterias and other commercial cooking facilities must avoid discharging grease into the municipal sewer system. Grease traps will start to produce odors after a few weeks. Sometimes strong odors from grease traps will permeate. To avoid that, grease trap must be cleaned regularly, because the odor coming from a grease trap will bring unpleasant smell that can disrupt the customer’s appetite. Grease trap bacterial enzyme additives are becoming more popular among restaurant owners and food service manufactures. Bacterial additives digest fats, oils and greases, converting them into water and carbon dioxide with virtually no by-products. Bacterial additives will eliminate grease trap odors, and strong smells (Skierkowski, 2014).

Hand washing basins at Faculty of Public Health canteen was not in good condition since the number is not adequate and damage. Hand soap and hand dryer must be added too. Good hand washing practices are essential for protecting people from the germs, chemicals, and dirt that can accumulate on hands. Washing hands with soap and water can reduce salmonellosis risk on people (Rachman, 2009).

Store the food in proper condition was critical control point (Lelieveld *et al.*, 2005). Some stalls put their food in the showcase but they were not sealed properly. This condition lead to contamination from flies and dust. Food handler knowledge and awareness should be enhanced by giving them food safety education.

Food is one medium that can spread disease. Bacterial contamination in food can
be caused by food handlers habits. Food handlers infected with food borne disease and become carriers can transmit the disease to consumers through food (Schneider, 2006). Clothing used by food handlers can be a source of contamination. Therefore, the clothes must be clean (Hobbs, 2007). Use of aprons, headgear and gloves is required to prevent contamination. This is one of the technical requirements of hygiene and sanitation standards. Aprons can minimize contamination from clothes and keep it clean. The use of headgear is also important to ensure that no hair and dandruff fall into food (Hobbs, 2007). Food handlers are advised not to use the jewelry in hand while their worked, because it can contaminate the food. Rings or bracelets can be a media spread of bacteria. In addition, hand washing is also a major factor in maintaining the cleanliness of the food. Effective hand washing time is every going to cook and handle food.

CONCLUSION
Sanitation facilities of student’s canteen of Public Health Faculty should be improved, have good daily maintain, and supervised periodically. It is recommended if the canteen should be certified by Surabaya District of Health Office as the competent institution.

REFERENCE
GENETIC AND GENOMIC NURSING COMPETENCIES FOR THE COMMUNITY NURSE

Sugeng Mashudi

Health Science Faculty, Muhammadiyah University of Ponorogo
Email: nershudi@gmail.com

ABSTRACT

Genetic/genomic nursing is the protection, promotion, and optimalization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis of human response, and advocacy in the care of the genetic and genomic health of communities.

The objectives to review the opportunities and possibilities for community nursing competencies in genetic/genomics through the illustration of case scenarios in community care. This study is a literature study; research reports. The data sources used in literature study are categorized into two: 1) primary sources are in the form of written sources which is form the first or original sources; 2) second sources are any written sources which are not form the original sources which can be in the form of internet documents and newspaper.

The result community nurses have the potential to influence whether or not cutting edge research discoveries are utilized at the community. Community integration of genetic/genomic information has the potential to optimize health outcomes for primary prevention. This study implies that community nurses need to include genetics/genomics in their practice in order to impact quality patient care today and for the future.

Keywords: Community Nurse, Genetic, Genomic, Competence

INTRODUCTION

Genetics/genomics nursing is the protection, promotion, and optimalization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis of human response, and advocacy in the care of the genetic and genomic health of individuals, families, communities, and populations. This includes health issues, genetic conditions, and diseases or susceptibilities to diseases caused or influenced by genes in interaction with other risk factors that may require nursing care (ANA, 2011).

Genomic medicine is an emerging medical discipline that involves using genomic information about an individual as part of their clinical care (e.g. for diagnostic or therapeutic decision-making) and the health outcomes and policy implications of that clinical use (NGHRI, 2016).

Genetics nursing has traditionally involved the care of people with single-gene and chromosome disorders such as cystic fibrosis, Huntington disease, and Down syndrome. However, even single-gene disorders are modified by other genes and the environment, thus broadening the nursing specialty to include genomics nursing, which involves health issues related to multiple genes in the human genome, including their interactions with each other and the environment, and the influence of other psychosocial and cultural factors (ANA, 2011).

Genetics nursing involves an interpersonal relationship between the
client (communities, or populations at risk for genetic conditions) and nurse. Comprehensive genetics nursing practice is a dynamic process that involves interdisciplinary collegiality and collaboration or linkage with genetics professionals and other health care professionals to serve a shared mission of assisting clients in reaching their self-defined outcome. This outcomes may be health education, improvement, maintenance, restoration, or a peaceful death (ISONG, 2011).

The following is an illustrative, rather than comprehensive, list of client need for which genetics nurses can develop methods of intervention and evaluation: a) emotions related to discovery of and experience with a genetic condition; b) ethical, legal and social issue; c) health education, improvement, maintenance, restoration, or a peaceful death; d) incorporation of genetic knowledge into daily life; e) informed decision making related to genetic condition and the use of available genetics technology and services; f) knowledge about risks for a genetic condition or chronic disease that has a genetic component and associated disability or morbidity; g) participation in a complex health care system; h) physiologic and pathophysiologic processes; i) self image and self esteem (ISONG, 2011).

MATERIAL & METHOD

This study is a literature study. Literature study is related to the study of theories and other reference which is associated with genetic and genomic nursing competencies for the community nurse. This study will also utilize scientific literatures (Sugiyono, 2012), Systematic as one of the characteristics of science (Mashudi, 2012). Literature study is a data collection technique which studies books, literatures, notes, and reports which are related to the investigated problems (Nazir, 1988). The data sources used in literature study are categorized into two: 1) primary sources are in the form of written sources which is form the first or original sources; 2) second sources are any written sources which are not form the original sources which can be in the form of internet documents and newspaper.

The data collection technique for this literature study was taken through documents study. The steps that must be done in literature study must focus on searching articles, books, and biography which will be very helpful to get the needed relevant sources. The collected information were read, noted, arranged, and rewritten in a research concept.

DISCUSSION

Scope of Genetic/Genomic Nursing Practice

The International Society of Nurses in Genetics (ISONG) has a diverse membership befitting its name. ISONG is the official professional organization of nurses in genetics in the United States, and also represents genetics nurses worldwide. ISONG is responsible for defining and establishing the scope of professional nursing practice in genetics for nurses globally. ISONG acknowledges the role of the American Nurses Association (ANA) in defining the scope of practice for the nursing profession as a whole in the United States and supports the ANA Social Policy Statement (2003), which charges specialty nursing organizations with defining their individual scopes of practice and identifying the unique characteristics of their specialties (ANA, 2007).

Genetic Influences, Cancer genetics and genomics provides the scientific basis for understanding the process of carcinogenesis with implications for identifying those at risk; for those diagnosed with cancer; and for those
undergoing treatment for cancer (See Figure 1).

Figure 1. Genetic Influences (Jenkins, J. 2011)

Theories Used in Genetics Nursing Practice

Genetics Community nurses used a number of theories for assessing, planning, implementing, and evaluating care that is responsive to nursing phenomena of concern (see figure 2). Such theories are derived from nursing, genetic, biologic, behavioral, and medical sciences, as well as other related fields. Theories provide a framework for understanding the phenomena of concern for nurses.

Figure 2. The Nursing Process (Alvarenga, 2016)

Genetic Competencies Identified by the American Association of Colleges of Nursing

Genetic/genomic competence is now an expectation for professional nurses. Of the nine content areas identified in the AACN essentials document, the three relevant for genetic/genomics are presented below:

Essential I: Liberal Education for Baccalaureate Generalist Nursing Practice

This document defines a liberal education to include both the sciences and the arts. The four science categories listed as essential include the physical sciences (e.g., physics and chemistry), the life sciences (e.g., biology and genetics), the mathematical sciences, and the social sciences (e.g., psychology and sociology).

Essential VII: Clinical Prevention and Population Health (pp.23-26)

Thirteen outcomes are listed for this essential. The first two are related to genetics/genomic.

1) Assess protective and predictive factors, including genetics, which influence the health of individuals, families, groups, communities, and populations.

2) Conduct a health history, including environmental exposure and a family history that recognizes genetic risk, to identify current and future health problems.

The specific sample genetic/genomic content associated with this essential includes: 1) genetic and genomic; 2) screening; 3) pedigree from a three generation family history using standardized symbols and terminology.

Essential IX: Baccalaureate Generalist Nursing Practice

Twenty-two outcomes are listed for this essential, and the second one is specific for genetic/genomic: recognize the relationship of genetic and genomic to health, prevention, screening, diagnosis, prognostics, selection of treatment, and
monitoring of treatment effectiveness, using a contructed pedigree from collected family history information as well as standardized symbols and terminology. The specific sampel genetic/genomic content associated with this essential includes: 1) genetic and genomic; 2) pharmacology/pharmacogenomic (AACN, 2008).

Core Competencies From the National Coalition for Health Professional Education in Genetics (NCHPEG)

All health professionals should understand: 1) basic human terminology; 2) the basic patterns of biological inheritance and variation, both within families and within populations; 3) how identification of disease-associated genetic variation facilitates development of prevention, populations; 4) understand the importance of family history (minimum three generations) in assessing predisposition to disease; 5) understand the interaction of genetic, environmental, and behavioral factors in predisposition to disease, onset of disease, response to treatment, and maintenance of health; 6) understand the difference between clinical diagnosis of disease and identification of genetic predisposition to disease (genetic variation is not strictly correlated with disease manifestation); 7) understand the various factors that influence the client’s ability to use genetic information and services, for example, ethnicity, culture, related health beliefs, ability to pay, and health literacy; 8) understand the potential physical and/or psychosocial benefits, limitations, and risks of genetic information for individuals, family members, and communities; 9) understand the resources available to assist clients seeking genetic information or services, including the types of genetic professional available and their diverse responsibilities; 10) understand the ethical, legal, and social issues related to genetic testing and recording of genetic information (e.g., privacy, the potential for genetic discrimination in health insurance and employment); 11) understand one’s professional role in the referral to or provision of genetics services, and in follow-up for those services.

Health and Disease: The Result of Interactions between Genes and Environment

Dietitians and nutritionists already know that health care increasingly is informed by genetic perspectives. All health care ultimately will be genetically based to some extent, and dietitians and nutritionists should understand the basic principles of genetics so they can incorporate new information from genetics and genomics into education and practice as appropriate.

Genes play an important role throughout the lifecycle in both rare and common causes of morbidity and mortality. Genes also influence almost all human traits, including those of clinical interest to dietitians: taste, appetite, types of food one is drawn to, regulation of food intake, absorption of nutrients, and metabolic rate.

As a dietitian, you may think of single-gene Mendelian disorders when you hear the term "genetic." It is true that mutations in some specific genes cause rare (and often severe) illnesses. Although some dietitians see patients with single-gene disorders, more educate patients who have common conditions that have a genetic component, for example, obesity, hypertension, diabetes, and high plasma cholesterol. Because genes and gene products are involved in all disease processes, the question should not be, "Is this a genetic disease?" but rather, "What role do genes play in the expression of this disease in this person?" In virtually all conditions, genetic variations interact with environmental variables to produce the signs and symptoms that bring individuals, families, and populations to the attention of dietitians and other health professionals.
Just as genes mediate our interactions with our environment, the environment also affects our genes. For example, environmental exposures may change gene expression, and some people are genetically more susceptible to certain environmental exposures than are others. A very important environmental factor that affects health and disease is dietary intake.

**Examples of the interaction between genes and environment**

1) Genetically mediated traits affect the way one tastes and smells food, which may influence the foods one chooses and the quantity one consumes. Example: tasters and non-tasters of bitter taste in diet colas with saccharine

2) An (individual) ’s genes have a strong effect on his or her nutrient requirements. Example: genetic variations can affect how individuals metabolize folate, leading some individuals to increased daily folate requirements

3) Some food compounds could potentially interact directly with genes, modifying gene expression and thus affecting metabolism.

Genes and diet are an especially powerful combination because we all have genes, and we all eat. Although we have very little ability to modify our genetic makeup, dietary factors are readily modifiable; thus, it may be possible to alter some genetically mediated risks for disease through dietary interventions. This suggests that dietitians will have an increasingly important role to play in disease prevention and risk reduction as research reveals more information about the relationships among genes, diet, and disease.

**Case Study**

Why do complex disorders seem to "pop up" in some families? Consider an example. Suppose that Grandmother Smith has diabetes, which is caused (hypothetically) by three genetic variants that increase risk, plus her poor diet and lack of exercise. Though Grandfather Smith shares the same eating habits and is also sedentary, he only has one genetic variant that predisposes to diabetes, which is insufficient to cause illness. Grandmother and Grandfather Smith have two children, Brother Smith and Sister Smith. Brother Smith inherits two genetic variants from Grandmother Smith and one from Grandfather Smith. He is active and eats well and never develops diabetes (though he has sufficient genetic risk).

Sister Smith inherits one genetic variant from Grandmother Smith, has a moderate diet, and does not develop diabetes. Brother Smith goes on to have a child, Baby Boy Smith. Baby Boy Smith inherits two genetic variants from Brother Smith and two from Brother Smith’s wife. Even given an excellent diet and sufficient exercise, Baby Boy Smith has a very high genetic risk for diabetes, and should be particularly diligent to take advantage of the lifestyle modifiers available to him. Even ideal adherence to diet and exercise recommendations may not be enough to overcome the genetic susceptibility.

**Implications for Practice and Research**

These illustrate some currently available healthcare implications of genetic and genomic discoveries. The potential benefits to public health can best be realized if community nurses are aware of, prepared for, and able to competently adopt options for personalized healthcare into their practice. This will require a commitment by the nurse to become adequately educated and knowledgeable about the relevancy of genetic/genomic information for every patient. Nursing research that evaluates the effectiveness of nursing competency in making a difference in quality such as improvements in or optimizing of health outcomes and length of our patient’s lives is a key component in assuring that this revolution in health care is actualized (Conley, 2010).
CONCLUSION

Community nurses have a wonderful opportunity to create the optimal care model for implementation and utilization of genetic/genomic science that will make a difference in outcomes for community. The Essentials of Genetic and Genomic Nursing provides guidance for public health integration. The case scenarios described illustrate the relevancy, opportunities, and possibilities for advancing community nursing competency and thus impacting quality community care today and for the future. Just as the unfolding stories continuously unravel, so too will the options for improving healthcare illuminated by genetic/genomic research continue to expand.

This necessitates that informed and competent community nurses become intimately involved in policy decisions regarding types of service delivery and access; privacy and confidentially of genetic/genomic information; reimbursement for personalized healthcare; and creation of educational resources. Only then will the ability to appropriately and responsibly integrate these discoveries into practice to optimize health outcomes be achieved.

ACKNOWLEDGEMENT

The author thank to LPDP for facilitating this article.
FACTORS CAUSES OF OCCURRENCE CARIES PULP ON COMMUNITY IN MULYOHARJO PUBLIC HEALTH CARE DISTRICT PEMALANG

Tri Wiyatini¹, Irma H.Y. Siregar¹, Hermien Nugraheni¹, Priskila Widhi Martani²

¹) Lecturer of Health Polytechnic MoH Semarang
²) Student of Health Polytechnic MoH Semarang
Email: hermienprajoga@gmail.com

ABSTRACT

Dental Pulp Caries is caries disease that left untreated so that the carious process continues. There are several factors could affect the occurrence of Dental Pulp Caries, including clinical factors contained in the oral cavity and non-clinical factors that play role as a supporter of dental pulp caries. Based on preliminary study in Mulyoharjo Health Center, it showed that the occurrence of pulp abnormalities was 2154 cases with a percentage of 34.9 percent. This research aimed to determine the factors that cause dental pulp caries in communities in the Mulyoharjo Health Center, Pemalang.

The research type was quantitative method with case control study. The samples were 26 respondents for the case group and 26 respondents for control group. Chi square was used for the test data analysis.

The research results showed that the significant value of the variable plaque pH, plaque index, OHIS, salivary pH, knowledge, attitudes, actions and environments showed a significant effect of the emergence of caries. On the contrary, the variable saliva hydration, saliva viscosity, health care, and genetic factors showed no significant effect. The conclusions of this study indicate that the most influencing factors of the dental pulp caries is the pH plaque. Therefore, it is needed to establish promotional activities in Mulyoharjo village regularly.

Keywords: Caries Pulp, Clinical Factors, Non-Clinical Factors

INTRODUCTION

Problems with teeth and mouth that often occurs in people include dental caries and periodontal disease. Dental caries is a disease of dental tissue, which is characterized by tissue damage, starting from the tooth surface to extend towards the pulp (Tarin, 2013). More than a quarter (25.9%) of people in Indonesia has oral and dental problems including dental caries and periodontal disease. Central Java province has oral and dental problems by 25.4%. Indonesia DMF-T index of 4.6 with respective values: D-T=1.6; M-T=2.9; F-T=0.08; which means that tooth decay teeth Indonesian population was 460 per 100,000 people (Riskesdas, 2013).

Caries continues gradually to reach parts of the pulp and cause inflammation of the pulp tissue. The pulp tissue may also experience inflammation of both acute and chronic, it is because of the irritation caused by microbes (bacteria) that is too long can result in death of the pulp or pulp necrosis (Walton & Torabinajed, 2008). Pulp disease begins with plaque formation in physiological processes on the surface of the tooth. According to Kidd and Bechal (2013), some bacteria are able to ferment the carbohydrates (such as sucrose and glucose), to produce an acid, causing
plaque pH will decline to below 5 within 1-3 minutes. The decrease in plaque pH repeatedly will lead to demineralization of the tooth surface. Poor oral hygiene is resulting in a decrease in saliva product, increased dental plaque, and changes in the flora of the mouth.

According to Hendrick L. Blum in Mubarak and Chayatin (2009) other factors that influence health status and influence in the pulp caries is behavioral, environmental, health, and offspring. Health is the totality of environmental factors, behavior, health care, and hereditary factors interplay with each other. The health status will be achieved optimally if four factors together have optimal conditions (Maulana 2009).

Everyone needs to maintain oral health by brushing teeth properly to prevent dental caries. Proper behavior in brushing teeth is brushing every day after breakfast and before bed at night. Most people are brushing their teeth in the bath in the afternoon, which is 79.7%. Most people brush their teeth every day while bathing in the morning or evening bath. Correct toothbrushing habits of Indonesia's population is only 2.3% (Riskesdas, 2013).

The purpose of this study was to determine the factors that cause caries the pulp in communities in the PHC Mulyoharjo Pemalang.

**METHOD**

Type of This was quantitative research method with a case control study conducted by comparing two groups of cases and controls. The sampling method in this study determined based on probability sampling technique. Number of samples studied was 26 people who have cases of caries pulp and 26 people with healthy teeth. Criteria for inclusion in this study were age 20-50 years, male gender and women, people who have cavities up with the pulp, had received oral health care, and a resident of Village Mulyoharjo Pemalang. Exclusion criteria in this research were no cavities, has never received dental care, and did not willing to become respondents.

Data was collected by observation or direct observation of the object to be examined in a short time to get a picture of the object of activity. To examine the plaque index, plaque pH, OHI-S checks, checks saliva hydration, checking the pH of saliva, saliva viscosity was checked then recorded on the inspection sheet. Interview was conducted by structured questionnaire on behavioral, environmental, health and heredity of oral health in each sample.

The data analysis was performed by univariate and bivariate analysis. Univariate analysis was conducted to obtain the distribution of each variable influence and be influenced shown in diagram form and explain descriptively. The bivariate analysis was made to involve the relationship between variables influence and be influenced. Chi square test was used to determine whether there is a specific relationship between two variables or not with p value of 0.05, so that if the obtained value of p>α, the final result did not reach statistical, meaning there is no significant relationship between variables influence and be influenced.

Conversely, if p≤α values obtained, the final result means there is a significant statistical significant relationship between independent variables and the dependent variable. To find alternatives where the precedence to be done first will be assisted with theoretical approach to alternative priorities way out using methods CARL. Methode used for determining problem analyze was CARL (Capability, Accessibility, Readiness, Leverage) method. Problem analyze was needed to determine proper treatment.
RESULT

Clinical Factors

In the case group who had moderate plaque index (46%) higher than the cases that have bad plaque index (23%). While in the control group severe plaque index (0%) was lower than the control group who had mild plaque index (81%).

In the case group pH of plaque acid (31%) was higher than the cases that have plaque pH alkaline (15%). While the pH of plaque in the control group had a plaque pH acid (12%) lower than the control group who had plaque pH alkaline (73%).

OHIS in the case group as a risk of caries on the pulp (77%) was higher than the cases (23%). OHIS in the control group as a risk of caries on the pulp (23%) was lower than the control group that did not have caries risk of the pulp (77%).

The pH of saliva in the case group as a risk of caries on the pulp (69%) was higher than the cases that had not caries risk of the pulp (31%). While the pH of saliva in the control group a risk of caries on the pulp (23%) was lower than the control group that had caries risk of the pulp (77%).

Hydration saliva in the case group as a risk of caries on the pulp (54%) was higher than the cases that had not caries risk of the pulp (46%). While hydration saliva in the control group a risk of caries on the pulp (35%) was lower than the control group that had not caries risk of the pulp (65%).

The viscosity of saliva in the case group as a risk of caries on the pulp (35%) was lower than in cases group that had not risk of caries on the pulp (46%). While the viscosity of saliva in the control group as a risk of caries on the pulp (35%) was lower than the control group that did not have caries risk of the pulp (62%).

Nonclinical Factors

Environment variable in the case group as a risk of caries on the pulp (73%) was higher than the cases that did not have caries risk of the pulp (27%). While the environment in the control group a risk of caries on the pulp (31%) was lower than the control group that did not have caries risk of the pulp (69%).

Variable knowledge of the case group as a risk of caries on the pulp (73%) was higher than the cases that did not have caries risk of the pulp (27%). Knowledge of the control group as a risk of caries on the pulp (23%) was lower than in the control group that did not have caries risk of the pulp (77%).

The attitude in the case group as a risk of caries on the pulp (73%) was higher than the cases that did not have caries risk of the pulp (27%). The viscosity of saliva in the control group as a risk of caries on the pulp (27%) was lower than the control group that did not have caries risk of the pulp (73%).

The results of the actions in the case group as a risk of caries on the pulp (69%) was higher than the cases that did not have caries risk of the pulp (31%). While the viscosity of saliva in the control group as a risk of caries on the pulp (23%) was lower than the control group that did not have caries risk of the pulp (73%).

Health services in the case group as a risk of caries on the pulp (46%) was lower than a group of cases that had not a risk of caries on the pulp (54%). It is similar to in the control group a risk of caries on the pulp (46%) was lower than the control group that did not have caries risk of the pulp (54%).

The results of the examination in the case group variable offspring as a risk of caries on the pulp (58%) was higher than the cases that did not have caries risk of the pulp (42%). While the results of the variable offspring in the control group as a risk of caries on the pulp (42%) was lower than the control group that did not have caries risk of the pulp (58%).

The result of bivariate analysis using chi square at variable pH plaque, plaque index, OHIS, and salivary pH has a significant relationship with the
occurrence of caries the pulp. While the variable saliva hydration and viscosity of saliva did not have a relationship with caries pulp. The result of bivariate analysis using chi square to the environmental variables, knowledge, attitudes, and actions indicated a significant relationship with the occurrence of caries the pulp. While the variable health care, and the children had no relationship with caries pulp.

DISCUSSION

Clinical factors that cause caries the pulp in communities in the PHC Mulyoharjo Pemalang among other plaques covering pH plaque and plaque index, then the index of dental hygiene (OHIS), and the pH of saliva. From the test results of the relationship is known that four of these variables have a significant relationship to the occurrence of caries the pulp because of the results of Chi Square test the pH of the plaque has a significance value of 0.001, plaque index has a significance value of 0.000, OHIS have a significance value of 0.000, and the pH of saliva has a significance value of 0.01. Therefore, the pH of plaque, plaque index, OHIS, and the pH of saliva has a significance value of less than α (0.05) it is stated to have a significant relationship to the occurrence of caries the pulp.

Among the four clinical factors, it is known that the knowledge regarding caries dominates for pulp caries. It is suggest for the people to brush teeth regularly at least 2 times a day each after breakfast and before bed at night is need to be more emphasised to minimize the health problems of the teeth, increasing the consumption of fiber, such as fruits and vegetables, water fluoridation concentration maksimal 0.2 ppm and reduce sweet foods and attached, chew food using both sides of the jaw so that self-cleansing of the mouth can take place, frequently checked the oral health of at least 6 months and familiarize with clean and healthy behaviors to prevent dental health problems. It is also suggest for dental health personnel ie dental health workers to increase promotion and preventive services, especially in the community, working with the village to establish and implement the establishment of a cadre in order to distribute health-related information to the citizens of the Village Mulyoharjo.

Based on the alternative of problem solving prioritization revealed that it is strong need to establish education on how to brush teeth properly because based on the result of this research showed plaque pH OHIS was include in severe categories coupled with the knowledge that poor people become less concerned with oral health. Therefore, it is expected a better understanding of oral health in the community, both of dental and oral diseases, the causes of dental and oral diseases and how to prevent oral disease.

Then, the second priority is training of Cadres regarding oral health in Sub Mulyoharjo. This can be done as a form of cadre training from health personnel to increase awereness of society about the
health of teeth and a more active role in efforts to prevent caries of the pulp.

The third priority is the guidance of toothbrushing/family care, hopefully with the guidance of toothbrushing society becomes increasingly understand and apply the time and how to brush teeth properly so that it becomes a good habit and the occurrence of oral disease can be minimized.

CONCLUSION

This research can be concluded as follow: 1) Clinical factors that cause caries the pulp in communities in the PHC Mulyoharjo Pemalang Regency is a plaque that includes the pH of plaque and plaque index, then the index of dental hygiene (OHIS), and the pH of saliva; and 2) Nonclinical factors that cause caries the pulp in communities in the PHC Mulyoharjo Pemalang Regency is the knowledge, attitudes, actions, and the environment.

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Undang-Undang Republik Indonesia Nomor 36 Tahun 2009, Tentang Kesehatan Pasal 1 Lembar Negara RI


INFLUENCE OF ENVIRONMENTAL ADOLESCENT TO PERSONAL HYGIENE DURING MENSTRUATION IN SMA 22 MAKASSAR CITY

Yusriani

Faculty of Public Health, Indonesian Moslem University, Makassar

ad/: Jl. Dakwah No. 17 Makassar Postal Code. 90172
E-mail: yusriani83@rocketmaill.com

ABSTRACT

Menstrual hygiene is a personal hygiene during menstruation. Hygiene is very important during this period because improper menstrual hygiene can lead to infection of the reproductive organs. Based on the preliminary survey by researchers at SMA 22 Makassar revealed that 12 respondents never obtain health education about personal hygiene during menstruation. This study aims to identify influence of environmental adolescent to personal hygiene menstruation in SMA 22 Makassar. This study was cross sectional method. Sample was taken by proportional random sampling method. The total samples were 152 students. Data analysis used frequency distribution tables with chi square correlation test. The result showed that there was significant influence between the role of family (p=0.000), the peers (p=0.000), mass media (p=0.000) to personal hygiene during menstruation in young girls. However, there was no association effect income parents (p=0.386) to personal hygiene during menstruation in students at SMA Negeri 22 Makassar in 2016. The student is expected to maintain personal hygiene and take advantage of resources and technology that are positive both through the role of parents of family, the mass media and peers.

Keywords: Adolescent, Environmental, Menstruation, Personal Hygiene

INTRODUCTION

Adolescent reproductive health is important. Adolescence is a period of transition from child to adulthood with characterized by changes in the growth, the emergence of various occasions and often faces reproductive health risks (Prasetya, 2010). The number of adolescents was estimated at 1.2 billion, or about 1/5 of the world population (Astuti, 2011).

According to the World Health Organization (WHO), the prevalence of vaginal infections experienced by 25-50% of women, the symptoms such as excessive vaginal mucous, lumpy, itchy and smelly (Kissanti, 2008). One of the complications that occur as a result of a vaginal infection is cervical cancer. Cervical cancer is a malignancy that occurs in the cervix (cervical) which is the lowest part of the uterus that protrudes into the peak of intercourse hole or vaginal (Health Departmen RI, 2006).

Data Basic Health Research (Riskesdas) of 2010 stated that majority of adolescents by age 10-24 years in Indonesia did not received reproductive health education as much as 74.9%. Whereas according to the characteristics of the age group mentioned that 86.3% teens 10-14 years old did not received counseling about reproductive health, aged 15-19 years by 65.8%, and the 20-24 years age as much as 69.6%. Therefore, it can be concluded that more than 50% of adolescents still lack education on reproductive health. Adolescent age 10-14 years old is a larger group who do not get
counseling generally is the first secondary school age children. Personal hygiene is a treatment performed on each person to maintain good health, both physically and psychologically. Fulfillment of personal hygiene is influenced by a variety of factors, including knowledge of the treatment. One that needs to be emphasized for women who menstruate is maintenance of personal hygiene. This is because it is based on existing theoretical study, an effort to reduce disruption during menstruation is familiarize themselves with hygiene behavior (Widyastuti et al., 2009).

This study aims to identify influence of environmental adolescent to personal hygiene menstruation in SMA 22 Makassar.

**MATERIAL & METHODS**

This survey research used a cross sectional approach. Study design is a design study of the relationship between independent variables (risk factors) and dependent variable (effect) to perform instantaneous measurements at the same time. Sample was taken by proportional random sampling method. The total sample was 152 students. Methods of data analysis using frequency distribution tables with chi square correlation test.

**RESULT**

Location of the study was conducted in SMA Negeri 22 Makassar and implemented in March 2016. The results of data processing and analysis are shown as follows:

Table 1. Distribution Characteristics of Respondents

<table>
<thead>
<tr>
<th>Characteristics of Respondent</th>
<th>N=152</th>
<th>%=100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;16</td>
<td>58</td>
<td>38.2</td>
</tr>
<tr>
<td>≥16</td>
<td>94</td>
<td>61.8</td>
</tr>
<tr>
<td>Age of Menarche</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>6</td>
<td>3.9</td>
</tr>
<tr>
<td>12</td>
<td>35</td>
<td>23.0</td>
</tr>
<tr>
<td>13</td>
<td>47</td>
<td>30</td>
</tr>
<tr>
<td>≥14</td>
<td>64</td>
<td>42.1</td>
</tr>
<tr>
<td>Father Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary School</td>
<td>10</td>
<td>6.6</td>
</tr>
<tr>
<td>Secondary School</td>
<td>12</td>
<td>7.9</td>
</tr>
<tr>
<td>High School</td>
<td>83</td>
<td>54.6</td>
</tr>
<tr>
<td>College</td>
<td>47</td>
<td>31.0</td>
</tr>
<tr>
<td>Mother Education</td>
<td></td>
<td></td>
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<tr>
<td>Elementary School</td>
<td>11</td>
<td>7.2</td>
</tr>
<tr>
<td>Secondary School</td>
<td>28</td>
<td>18.4</td>
</tr>
<tr>
<td>High School</td>
<td>85</td>
<td>55.9</td>
</tr>
<tr>
<td>College</td>
<td>28</td>
<td>18.4</td>
</tr>
<tr>
<td>Employment of Father</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entrepreneur</td>
<td>55</td>
<td>36.2</td>
</tr>
<tr>
<td>PNS/TNI/POLRI</td>
<td>32</td>
<td>21.1</td>
</tr>
<tr>
<td>Days man</td>
<td>20</td>
<td>13.2</td>
</tr>
<tr>
<td>Private Employes</td>
<td>29</td>
<td>19.1</td>
</tr>
<tr>
<td>Farmer</td>
<td>8</td>
<td>5.3</td>
</tr>
<tr>
<td>Honorary Staff</td>
<td>1</td>
<td>.7</td>
</tr>
<tr>
<td>Contractors</td>
<td>4</td>
<td>2.6</td>
</tr>
<tr>
<td>Employment of Mother</td>
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<td></td>
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<tr>
<td>Entrepreneur</td>
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<td>PNS/TNI/POLRI</td>
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<td>7.9</td>
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<tr>
<td>Private Employes</td>
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<td>5.3</td>
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<tr>
<td>Teacher</td>
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<td>3.9</td>
</tr>
<tr>
<td>Nurse/Midwifery</td>
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<tr>
<td>Labour</td>
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<td>1.3</td>
</tr>
<tr>
<td>House Hold</td>
<td>104</td>
<td>68.4</td>
</tr>
</tbody>
</table>

Source: Primary Data, 2016

Table 2. Distribution of respondents by Variable Examined

<table>
<thead>
<tr>
<th>Variable</th>
<th>N=152</th>
<th>%=100</th>
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</thead>
<tbody>
<tr>
<td>Family Roles</td>
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<td></td>
</tr>
<tr>
<td>Less</td>
<td>44</td>
<td>28.9</td>
</tr>
<tr>
<td>Enough</td>
<td>108</td>
<td>71.1</td>
</tr>
<tr>
<td>Peers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>67</td>
<td>44.1</td>
</tr>
<tr>
<td>Positive</td>
<td>85</td>
<td>55.9</td>
</tr>
<tr>
<td>Mass Media</td>
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<td></td>
</tr>
<tr>
<td>Less</td>
<td>23</td>
<td>15.1</td>
</tr>
<tr>
<td>Enough</td>
<td>129</td>
<td>84.9</td>
</tr>
<tr>
<td>Parents Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;2.230.000/-month</td>
<td>31</td>
<td>20.4</td>
</tr>
<tr>
<td>≥2.230.000/-month</td>
<td>121</td>
<td>79.6</td>
</tr>
<tr>
<td>Personal Hygiene</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less</td>
<td>56</td>
<td>36.8</td>
</tr>
<tr>
<td>Enough</td>
<td>96</td>
<td>63.2</td>
</tr>
</tbody>
</table>

Source: Primary Data, 2016
**Table 3. Relationship between Independent Variables with Dependent Variables in SMA Negeri 22 Makassar 2016**

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Personal Hygiene During Menstruation</th>
<th>Total</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td><strong>Family Roles</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less</td>
<td>36</td>
<td>81.8</td>
<td>8</td>
</tr>
<tr>
<td>Enough</td>
<td>20</td>
<td>18.5</td>
<td>88</td>
</tr>
<tr>
<td><strong>Peers</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Negative</td>
<td>12</td>
<td>14.1</td>
<td>73</td>
</tr>
<tr>
<td>Positive</td>
<td>44</td>
<td>65.7</td>
<td>23</td>
</tr>
<tr>
<td><strong>Mass Media</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less</td>
<td>17</td>
<td>30.4</td>
<td>6</td>
</tr>
<tr>
<td>Enough</td>
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<td>90</td>
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<tr>
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<tr>
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<td>79</td>
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</tbody>
</table>

Source: Primary Data, 2016

Based on the results of statistical tests using yate's correction obtain that there was the influence of the role of family, peers, mass media on adolescent girl personal hygiene during menstruation in SMA Negeri 22 Makassar in 2016 (p=0.000<α0.05). While income parents did not have effect on personal hygiene during menstruation teenage daughter p=0.386>α=0.05, then H0 is accepted and Ha rejected.

**DISCUSSION**

**Influence of Families Role against Personal Hygiene during Menstruation**

The role of the family in this research is the contribution of other families like sister, grandmother, aunt and other family in providing good information about personal hygiene during menstruation. The role of families and schools in the form of children, are visualized on the glasses-contextual brofenbenner ecological theory, this theory focuses on the environment in the form of quality children's mutual. Myers (1992) in Suchi (2013), mentioned the dominant role of the family and the school in shaping the quality of children is the attitude and knowledge of the future.

There was a relationship between the roles of families with personal hygiene during menstruation in young girls in SMA Negeri 22 Makassar in 2016. The higher roles of the familys are followed by the higher readiness of young women to face menstruation. Conversely the lower the role of the family, the lower the readiness of young women face menstruation.

**Influence of Peers against Personal Hygiene during Menstruation**

Influence of peers in this research was gave the information and advice regarding personal hygiene during menstruation. As a source of cognitive, peer relationships allow to teach each other in a situation and in general these activities effectively. Hartup (1992) in the Wali et al. (2010), identifies four types of teaching between friends of the same age: the peer tutoring, cooperative learning, peer collaboration, and peer modeling.

From the results using the Fisher exact test statistic test obtained by value p=0.000, indicated that there was a correlation between the influence of peers with personal hygiene menstruation in young girls in SMA Negeri 22 Makassar.

The results are consistent with research conducted by Basir (2011), which examined the relationship between resources from peers with personal hygiene menstruation in SMPN 8 Makassar with p=0.000 or p<0.05. In his research also concluded that the more
often a person obtained information from peers’ then menstrual hygiene was performed better.

Influence of Mass Media against Personal Hygiene during Menstruation

The media can play a role in providing positive information to anyone who accesses it. Adolescent sexual knowledge gained from peers or older, from books, magazines and the internet (Djureto, 2002). The results of statistical tests with continuity correction values obtained $p=0.000$ ($p<0.05$), means that there was a relationship between the influences of the mass media to personal hygiene menstruation in young girls in SMA Negeri 22 Makassar in 2016.

The results are consistent with research conducted by Wati Egong (2005) in the Class II Schoolgirl SLTPN 12 Semarang that revealed the relationship between the resources of the media with personal hygiene menstrual period. In this research showed that the more frequently respondents get information from the mass media menstrual hygiene would be better.

Effect of Parents Income Against Personal Hygiene During Menstruation

Socio-economic status in this study is the conditions/family economic circumstances that can be seen from the income of parents to meet the needs of their children (the respondents) at this time. Socio-economic status is a snapshot of the person state or a society in terms of socio-economic, picture it as level of education, occupation and income. The economic status of a family will affect a child’s behavior during menstruation.

Based on the results of studies using statistics test continuity correction values obtained $p=0.386$, means there was no relationship between parental incomes with personal hygiene menstruation in young girls in SMA Negeri 22 Makassar. The results are consistent with research conducted by Kurniasi (2001) which said that there was no relationship between per capita income of families with personal hygiene menstruation and not in line with the research Omdivar & Begum (2010) in Kabir (2007) which indicated that there was a relationship among families with a per capita personal income hygiene menstruation.

CONCLUSION

There is an association of the role of family, peers and the media to adolescent personal hygiene during menstruation. There is no effect of family income on student personal hygiene during menstruation in SMA Negeri 22 Makassar in 2016. The school and parents should provide education on reproductive health, especially with regard to good personal hygiene menstruation through learning in class and incorporate those articles, posters on reproductive health. The opportunity to utilize the role of the mass media to seek positive information is also need to be recognized, especially topic on personal hygiene menstruation.

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ERGONOMIC ANALYSIS USING RAPID UPPER LIMB ASSESSMENT (RULA) METHODE ON LAUNDRY WORKERS

Anita Dewi Prahastuti Sujoso

Department of Environment Health and Occupational Safety and Health
Public Health Faculty Jember University
Email: anitadewips@gmail.com

ABSTRACT

Laundry is an informal business with characteristics fixed working hours, unspecific education, and a certain salary. Working time on laundry have characteristics in monotonous and repetitive. Almost all of laundry environment does not meets the requirements. Activities in the laundry process are at least six working stages, ie sorting, washing, drying, ironing and packing. On the sixth of these activities often carried out with improper position. This study aims to provide data or information to the government, employers and workers regarding ergonomics evaluation of the laundry. This research was conducted with the observation method using a questionnaire. Measuring instruments used in this study is the RULA, REBA and OWAS. Based on the work postures RULA scores drying unit in the category 6, which is the unit washing, ironing and packaging are included in category 4, which required further investigation and necessary improvements immediately. The reception unit was in the category 2, which is still safe and not necessary for investigations. Based on work posture REBA score with a high risk was in the drying and ironing unit. Work posture with the high risk was found in the washing unit and packaging. While safe working posture or no risk found on the reception. Based OWAS scores, almost all units still in category 1, the working posture does not cause health problems and unnecessary correction. In the ironing unit, working posture showed that although not pose a risk, but still needed improvement. Based on Nordic Score. The workers had musculoskeletal complaints on the right shoulder, left shoulder, right knee and left knee. Based on the research results it could be advised that it need improvement or redesign of work stations. In addition, it is recommended that the government should conduct surveillance on workers to prevent musculoskeletal laundry.

Keywords: ergonomics, work postures, musculoskeletal disorder

INTRODUCTION

Laundry effort is informal businesses that characterized by not fixed working hours, low education, and salary. Characteristics of work in the laundry are monotonous and repetitive. Not all of the laundry business working environment. Work activities in the laundry has at least six working stages, namely sorting, washing, drying, ironing and packing. In the sixth process of these activities are often carried out with a position that is unnatural (OHSAH, 2003)

The first process is sorting process, in which workers weighing clothes to be washed, separating the colored clothes and colorless. This process is done manually. Potential hazards of this process comes from dust clothes, raised position while carrying loads of clothing to the wash basket with unnatural position that may cause falling or slipping. The second process is washing. In this process the
potential hazards that may arise is the use of detergents, perfumes and fabric softener. Chemical substances contained in detergents, fragrances and clothing can interact with the skin, eyes, respiratory and digestive tract. The third process is the drying process. Drying is done in two stages, namely by using a dryer and drying. The drying processes with machines cause noise and vibration. After passing through the drying step with the machine, it is followed by drying with drying. The fourth process is ironing. Ironing can be done in two ways, namely by steam irons and heat ironing. Conditions that dominate this process is the hot conditions (Public Services Health and Safety Association, 2010). Moreover ironing generally does not fit the size of the worker's body dimensions. This causes ironing position by bending, prolonged standing and legs bent. Ironing position is static posture. Area of ironing is not extensive, causing ineffective and repeatable movements.

The last process is packing. Packing is the process of inserting the finished ironed clothes in plastic wrap, and then placed in temporary storage closet. Packing activities involves static and repetitive hand and arm movements. Common positions are bending, lifting, rolling, lay on load on the rack or cabinet that exceeds the height of the worker. A research states that the work area is too high will cause discomfort working posture (Park, 2013). Statistics of accidents on the laundry workers were released by OHSAAH 2003, mentioned that laundry workers had back complaints resulting from excessive stretching movements. The majority of workers reported experiencing repetitive movements, unnatural postures and overexertion. Research by Monteiro, et al in 2009, found that musculoskeletal complaints result in disruption of work ability.

The working process of laundry is loaded with potential danger. However, not all workers are aware of the dangers because of lack of education and economy restraint. This phenomenon prompted researchers to study more deeply on occupational safety and health laundry through ergonomics analysis, with the ultimate goal of creating an ergonomic work area laundry and environmentally friendly.

**MATERIAL & METHOD**

The main data in this study were obtained from respondents directly through the measurement of work postures, working position, control, work activities, the lifting loads manually and risk of musculoskeletal complaints and work environment. The populations in this study were laundry workers in Jember district. This study was conducted over four months.

Validity and Reliability Testing of Rapid Upper Limb Assessment (RULA) Instrument is an instrument for measuring the working posture (Figure 1). Consists of three phases:

1) **Phase 1.** Development of methods for recording working posture. To generate a working method that is quick to use, the body is divided into segments that form two groups or groups namely groups A and B. Group A includes the upper and lower arm, and wrist. While Group B includes neck, back, and legs. This is to ensure that the whole posture is recorded, so that any irregularities or restrictions posture by foot, back or neck that may affect the posture of the upper body member can be included in the assessment.

2) **Phase 2.** A single score needed from Group A and B to represent the loading level of the posture of the musculoskeletal system to do with a combination of body postures. The sum score of use of muscle (muscle) and power (force) Score Posture A produce
C. Whereas the sum of the scores Posture B generates Score D.

3) Phase 3 Development of Grand Score and Action List

This stage aims to combine Score C and D into a single grand score that can provide guidance to the priority of the investigation/further investigation. Every possible combination C and D have been given rank, the so-called grand score of 1-7 based on the estimated risk of injury associated with musculoskeletal loading.

RULA normally used for:

1) Tools to conduct a preliminary analysis which is able to determine how much risk affected by factors that cause injury to workers, namely: posture, static muscle contraction, repetitive movements and styles.

2) Determine the priority of work by the risk factor of injury. This is done by comparing the value of different tasks that are evaluated using the Rapid Upper Limb Assessment (RULA).

3) Finding the most effective action for jobs that have a relatively high risk. Analysis can determine the contribution of each factor to an overall work its way through the value of each risk factor.

Instrument validity means that measuring instruments used to obtain data are valid, ie measure what should be measured. Reliable means that there is equality of data within different measurements (Sugiyono, 2012). In this study, it is not necessary to test the validity and reliability of the instrument, as a measuring tool REBA, RULA and Nordic Body Map is a measuring standard tool to assess posture, manual material handling, and complaints of musculoskeletal (Mc Atmeney, L, 1993; Kroemer, 2001).

Work environment that were studied in this laundry include hours of work, where standard operation procedures (SOP), the source of danger and waste disposal facilities. There were 30 surveyed laundry work environments obtained 85 workers.

RESULT

A laundry business is informal sector employment. The informal sector has the characteristics of easy to enter, do not require special skills or education, and a simple equipment. In general the laundry business has no definite working hours. But the majority of laundry business hours starts at 07.00 or 08.00 to 15:00 or 16:00. It was also found that laundry is open from 08:00 until 21:00. Similarly, the hours of work, resting on a laundry unit is also uncertain. Break was not determined. The type of break according to ergonomics, the recess in the laundry including spontaneous break.

From thirty (30) surveyed laundry, the majority (90%) do not have a business license laundry. Most of the laundries were administered in the household. There were no official data from relevant divisions or offices about the data valid number of existing laundry. The majority of respondents aged was 20-25 years, with a high school education. The majority of respondents has been working for <1 year. The average length of work was 1.5 years. The majority of respondents were. Laundry s work does not require special education. There was no job skills training for workers before working in the laundry.

The stage of acceptance by the score RULA showed that majority of all respondents (40%) in two categories, namely the position was still acceptable and did not need correction. At the reception activity did not perform uncomfortable posture. All activities performed in a standing position. From the table above can also be described each response scores, the position of the upper arm or upper arm were 22 (73%) lifted upwards. Position lower arm or forearm 16 activities (53%) were at 0-90°. The position of the wrist or wrist majority
cranked up to the maximum range. The position of the majority wrist bent but still within reach. Majority neck position rotated between 0° to 10°.

The majority of body position were spinning and turning. The position of the majority was feet balanced. The washing step by Rula score showed all the activities of the majority (30%) in category 4 that required immediate correction. In laundering activities in question are washed manually. All activities was done in a sitting position. From the table above it can also be described scores in the washing steps respectively, the position of the upper arm or upper arm majority of the 15 activities (50%) was undergone from an angle of 15° to 45°. Position lower arm or forearm was 15 activities (50%) at 0-90°. All activities on the position of the wrist or wrist rotate but still affordable. The position of the majority wrist bent but still within reach. Majority neck position rotates between 0° to 10°. Body position majority were spinning and turning. The position of the majority was feet balanced.

The stage of drying, based on the score of RULA indicated that 11 activities (30%) was under category 6 which required further investigation and repair immediately. From the table above, it can also be described scores respectively that at the stage of drying. The position of the upper arm or upper arm majority showed that 14 activities (47%) had an extension to the angle between 20° to 45°, shoulders lifted up and abduction. Position lower arm or forearm majority revealed 11 activities (37%) at 0-60°. All activities on the position of the wrist or wrist were rotated but still affordable. The whole position of rotation of the wrist was still within reach. Neck position rotated between 10° to 20°. Spinning and looked down. The position of the majority of the activity employed the upright body and balanced feet position.

At the packaging stage based on the total RULA score indicated 14 activities (47%) in category 4 that required further investigation and where necessary, immediate changes. From the table above, it can also be described scores respectively that the position of the upper arm or upper arm majority of 14 activities (47%) which had an extension to the angle between 20° to 4°, shoulders lifted up and abduction. Position lower arm or forearm majority, namely 17 activities (57%) was at 0-60°. All activities on the position of the wrist or wrist were rotated but still affordable. The whole position of rotation of the wrist was still within reach. The majority of the activity (47%) of the neck rotated between 10° to 20°. Spinning and looked down. Body position showed that the majority of 20 activities (67%) upright. The position of the foot was balanced.

In the laundry business or workflow activities are generally divided into five activities: receiving, washing, drying, ironing and packing. Of all the activities recorded in the admissions process, namely 249 activities, the majority of the activity that were 131 activities remained at level 1. Level 1 means the work attitude is in accordance to the musculoskeletal system and do not need improvement.
Of all the activities recorded in the admissions process, namely 401 activities, the majority of the activities (191) remained at level 1. All the activities recorded in the admissions process that were 844 activities, the majority of the activity were 503 activities remained at level 1. All the activities recorded in the admissions process that in 1106 activity, the majority of the activity that were 632 activities at level 2. Level 2 means the attitude of hazardous work on the musculoskeletal system (working attitude resulted in a significant strain effect) need improvement in the future.

All the activities recorded in the admissions process, namely 663 activities, the majority of the activity were 204 activities at level 1. Musculoskeletal complaints in workers taken from the laundry in the laundry workers were elected to serve as a survey. The results assessment respondent characteristics and musculoskeletal complaints based assessment using Nordic Body Map.

Number of workers who did not have complaints was higher than those who experiencing musculoskeletal complaints at any location. These results illustrated that the laundry workers surveyed in good health and do not have complaints. From the workers who have complaints, the majority felt the complaint on the left shoulder and right shoulder. This was consistent with the results of the observation that the laundry activities involve a lot of hand gestures activities.

CONCLUSION

An overview of postures based on scores RULA found that based on the score RULA working posture on the drying unit into the category 6, the unit washing, ironing and packaging are included in category 4, which required further investigation and necessary repairs immediately. Whereas the reception unit is categorize into category 2, mean still safe and not necessary further investigations. Musculoskeletal complaints experienced by the majority of laundry workers are complaints on the right shoulder, left shoulder, right knee and left knee.

REFERENCES


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Figure 1. RULA Employee Worksheet (Mc Atmeney, 1993)
IDENTIFICATION OF DISTRIBUTION OF MERCURY POLLUTION ON POPULATION WELL SMALL SCALE GOLD MINING (CASE STUDY: DISTRICT CINEAM TASIKMALAYA WEST JAVA)

Anto Purwanto¹), Yuldan Faturahman ²), Andi Nurrahman³)

¹,² Faculty of Health Sciences, Siliwangi University Tasikmalaya 46115
³) Faculty of Informatic Engineering Siliwangi University Tasikmalaya 46115
Email: antopurwanto@unsil.ac.id, yuldanfaturahman@unsil.ac.id, andi.mbew@gmail.com

ABSTRACT

Mercury is a chemical widely used by gold miners both large and small-scale gold miners. In Tasikmalaya West Java, there are many people work as traditional gold mining or often referred as small scale gold mining. Mercury is hazardous and affects health. According to data from Cineam Public Health Center, the number of anemic pregnant women is high, that may indicates the presence of mercury content in mothers and when its deposits would affect the fetus of the mother. The intrusion of mercury waste into drinking water sources tend to occurred in the environment. The objective of this reseach was to identify the level of mercury contaminat in well as drinking source in with in a certain radius the area around small scale gold mining. The data was obtained by cross sectional. The results of the analysis in the laboratory showed that the majority (75%) wells were contaminated with levels of mercury; it could cause further events to the people who consume contaminated water. The conclusion is the source of drinking water that has been used by the people around the small scale gold mining, contaminated with mercury and it may pose health risk, especially pregnant women Cineam.

Keywords: Small-Scale Gold Miners, Mercury, wells, Cineam

INTRODUCTION

In Indonesia, many communities carry out traditional gold mining or commonly referred as the Small Scales Gold Mining (SSGM). During the process of gold mining, mercury has been used in amalgamation. In 2010, about 280 tons of mercury illegally imported into Indonesia for use in traditional gold mining. This figure has doubled in 2011³. During the process of amalgamation, it has mercury waste that is referred as tailing in traditional mining⁵. Tailings are the mercury waste that the level is continue to increase in line with the mining activities. Mercury is a chemical widely used by gold miners both large and small-scale gold miners (SSGM). The majority of researchers agree that the use of mercury had a greater lost impact than the results obtained from SSGM³. According to the regulation safe concentrations threshold of mercury (Hg) is only allowed 0.001 ppm. Generally, gold mining is a potential of natural resources, which provides better prospects in increasing the level of economic and social welfare. This economic improvement, especially in terms of income, employment and opportunities for new activities, outside the agricultural and plantation sectors. The number of workers in the mining districts is nearly 60% of the population in Cineam mined gold (Profile Subdistrict Cineam). Results of field orientation in 2012 showed the number of traditional miners as many as 100 people. This number
fluctuates depending on gold results were found. Research conducted by Husodo\(^2\), which revealed the evidence of mercury contamination at the site of gold mining in Kulonprogo, the river sediments and biota that live in the river, which crosses the village Kalirejo, Kokap, Kulon Progo Regency. Research conducted in the Gulf Buyat indicated average mercury concentrations in shellfish range 0.5019-2.1529 ppm, in sediments ranged from 0.1150 to 1.2341 ppm. Research in Ponce Enriquez Ecuador showed mercury concentrations in sediments ranged from 0.1 to 13 mg / kg, suspended particles ranged from 0.01 to 9.61 mg / kg and the average metal mineral ranges from 0.01 to 5.0 mg / kg. The size and burden of contaminant particles in aquatic environments will be transferred in the form of particles suspended in a stream. The concentration of heavy metals in the bottom sediments would endanger the biota because of remobilization of methylation and other processes in the water\(^1\). Mercury is an element that is toxic to humans and the can lead to chronic diseases in the population in San Joaquin, Queretaro, Mexico.

According to the United Nations Environment Programme (UNEP) Global Mercury Assessment\(^7\) (2002) found that the mercury found in fish throughout the world at harmful levels to humans and animals. In humans, hair is generally accepted as a means of estimation of the burden of methylmercury in the body, most likely derived from the consumption of fish\(^6\). Eventhough mercury is useful for industrial purposes such as the manufacture of batteries, cellulose and plastics, pharmaceuticals, paints, as well as laboratory equipment elektronic, but it also brings adverse effect to health. In water, mercury can be dispersed on the surface, maupunmengendap sediment. The tragedy of "Minamata disease" (Minamata disease), it was found the population in the surrounding area eat fish from contaminated sea that contain mercury from industrial waste\(^4\). Symptoms of mental disorders and neural defects began to appear, especially in children. It is not easy to eliminate the remnants of pollutants and rehabilitation of people affected by chronic (chronic) disorders. These conditions can occur in Sub district Cineam, because according to data from public health centers showed that the number of anemic pregnant women is increasing. This may indicate the possibility of mercury effect in mothers and when it deposits it would affect the fetus of the mother. Therefore there is urgency to measure the content of mercury in the well that is used as drinking water sources used by local people in area of small-scale gold miners.

**MATERIAL & METHODS**

This design of the study was cross sectional that measured levels of mercury in the wells as source of drinking water. The sample were 30 wells in sub district Cineam Sub district of Cineam is a region which has a traditional gold mining activity. The techniques of exploration and exploitation still using simple equipment such as hoes, crowbars, a hammer and a few other simple tools. Rocks and auriferous quartz vein ore mined or pulverized to measuring 1-2 cm, then milled by traditional equipment that called *gelundung* (Trommel, a length of 55-60 cm and a diameter of 30 cm with 3 -5 grinder iron rods). Ore weighing 5-10 kg puts in gelundung and played for a few hours, gelundung opened, discarded dregs (tailings) and added new ore. The waste that comes from tailings process contain mercury.
RESULT

The results of lab tests as shown in table:

Examination Date August 1, 2016
Table 1. Water Chemistry Examination

Results

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<th>No</th>
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Inspection Date August 11, 2016
Table 3. Water Chemistry Examination

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Inspection Date August 19, 2016
Table 4. Water Chemistry Examination

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Examination Date August 25, 2016
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<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>27</td>
<td>30</td>
<td>0.001</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>28</td>
<td>30</td>
<td>0.001</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>29</td>
<td>0</td>
<td>0.001</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>30</td>
<td>30</td>
<td>0.001</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

Based on the results of laboratory examination in the sample of well water showed that 17 samples out of 30 samples, or 56% of community wells contaminated with mercury above the threshold value. More than fifty percent of drinking water source was not appropriate to be consumed.

DISCUSSION

Content of Mercury Levels In Drilling Well

The majority of examined sample water indicated the level of mercury is above the threshold. It can pose the health risk to people who consumed contaminated water because of mercury and its derivatives are highly toxic, so that its presence in the aquatic environment may have adverse effects on humans because it is easily soluble and bound in body tissues aquatic organisms.

Mercury polluted water can influence local ecosystems since it is stable in sediment, has low solubility in water and easily absorbed and accumulated in body tissues of aquatic organisms, either through the process of bioaccumulation and biomagnifications through the food chain. It also said that fluctuations of mercury in the marine environment, particularly in the area of estuarine and coastal areas determined by the process precification, sedimentation, flocculation and adsorption desorption reaction.
The accumulation of mercury in the body of aquatic animals, namely phytoplankton (Chlorella sp), Mussel (genus Vivipare) and fish herbivore Gyrinocheilus aymonieri (fam. Gyrinochelidae) has a faster take-up rate of mercury than the process of excretion.

Mercury in nature generally in the form of methyl mercury (CH3-Hg), the form of organic compounds with the highest toxicity and difficult to biodegrade than the origin substance. FAO (1971) suggested that mercury can be accumulated in the form of methyl mercury, that can be accumulated by fish or shellfish, and also is toxic to humans.

Sea grasses system dominated darisendimen and mercury absorption from sea water. In the process that is free of mercury sendimen another road can go back into the food chain through its roots. Methyl mercury is formed in sediment are not stable so it is easily released into the water then it is accumulated in water animals and plants. Because it is highly toxic, the U.S. Food and Administration (FDA) determines standardization or Threshold Limit Value (TLV) levels of mercury in the tissues of the body of water bodies, ie 0.005 ppm.

Threshold Limit Value is a condition in which a chemical solution, in this case the mercury is considered not harmful to human health. When water or food has the mercury levels exceed the TLV, the water and food derived from a particular place should be declared dangerous. TLV for water containing mercury is 0.002 ppm total for fishing. Water pollution by mercury due to the nature of activities has range from 0.00001 to 0.0028 ppm, except in a few places such as river- in Italy where there are natural sources of mercury metal deposition, the level of mercury reaches 136 pph.

One of the impacts of mercury pollution are in fish, when the mercury goes into the water resulting substance is soluble in water, then fish eating plants in the water where the plant has been contaminated with mercury, the illness caused between another occurrence of toxicity. One example of this is mercury pollution in Minamata bay, where the residents around Minamata bay of methyl mercury poisoning as a result of waste products from the plastics factory. Methyl mercury contained in fish consumed by people around the bay. The fish are dying around the bay of Minamata had higher levels of methyl mercury by 9 to 24 ppm. In addition to mercury pollution in Minamata bay also occur in mining areas in West Kalimantan result of Illegal Mining (Mining Without Permission).

Miners typically use mercury to bind gold metal. Results effluent or waste from illegal mining enter to the river / water and brought mercury into rivers or bodies of water. Revelation, the element of youth River Pinoh who has done research on water pollution loud Watershed (DAS) Kapuas explained that the hard water into the human body, can be directly through drinking water that has been polluted, the shower water entering through the pores of the skin.

In free air, hard water through rainwater will enter the water system and then run into biotransportasi into methyl mercury. Effect of mercury toxicity to fish and aquatic biota can be lethal and sublethal. Lethal influence caused by disorders of the central nervous so the fish do not move or breathe rapidly consequently die. Effect of sub-lethal happened to the organs of the body, causing damage to the liver, reducing the potential for proliferation, growth and so forth.

The degree of lightness or heaviness of toxicity depends on duration of consumption, and the age of the patient. Thus, older people who eat foods contaminated with methyl mercury per day, will have more severe symptoms of the disease because of the toxicity of methyl mercury. In addition, children are more susceptible to the toxicity of methyl mercury than adults.
CONCLUSION

In Cineam, more than fifty percents of water wells contaminated with mercury and it will pose the health risk particularly for vulnerable group such as pregnant women.

REFERENCES


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THE EFFECT OF ORGANOPHOSPHATE PESTICIDE EXPOSURE ON LEVELS OF SERUM CHOLINESTERASE AND WHITE BLOOD CELLS PARAMETERS ON MAKMUR ABADI APPLES PLANTATION SPRAYING FARMER’S GROUP IN BATU

Aditya Sukma P.¹, and Henriesca Sandra A.P.P.²

¹Department of Environmental Health, Airlangga University, Indonesia
²Magister Student of Environmental Science, Diponegoro University, Indonesia

Corresponding author:
Aditya Sukma P
Campus C Mulyorejo Surabaya - 60115

ABSTRACT

Organophosphate is the most widely used synthetic pesticide groups in Indonesia. Organophosphorus compound is most commonly associated with poisoning in human. It accounting for more than 80% illness is caused by pesticides. The purpose of this study was to analyze the effect of organophosphate pesticide exposure on levels of serum cholinesterase and hematology abnormalities parameters among apples plantation sprayer farmers. This is a cross-sectional study conducted in Batu mupicle. The sample was randomly selected from 60 sprayers in a Farmer Group, consist of 23 exposed farmers and 23 comparison peoplr who did not exposed. The observed variables were the activity of serum cholinesterase and white blood cells (WBC). Blood samples were taken by health analysts then tested in the Clinical Laboratory of Kimia Farma Malang City. Result showed that inappropriate dose (p=0.031) and frequency of spraying (p=0.039) significantly affected serum cholinesterase levels. Overdose was caused by incorrect weighing equipment. The dose created by farmers did not fully trustworthy yet. The more frequent pesticide exposure on human body and shorter time intervals cause the higher pesticide residues in human body. The short rest intervals of apple sprayer farmer’s in exposure group will have been increased risk along the apple growing season. Low toxicity (p=0.028), moderate toxicity (p=0.042) and employment duration (p=0.03) significantly affected WBC levels. The conclusion showed that pesticides exposure which affected cholinesterase serum levels and hematology parameters were pesticide dose, frequency of spraying, pesticide toxicity and work duration per day. There should be a training, advice and guidance regarding good and correct application of pesticides use.

Keywords: Pesticides Exposure, Organophosphate Pesticides, Serum Cholinesterase, White Blood Cell, Toxicity

INTRODUCTION

Agricultural sector always absorb the largest labor, 39,328,915 peoples from 109,670,399 labor over 15 years by the end of 2011 (BPS, 2012). The labor includes farm workers, pesticide sprayers and owners. Therefore, the government must pay attention to the farmer’s safety and security from exposure of widely used chemical pesticides.

Organophosphate are a chemical pesticides that most easily absorbed by the human body, through the respiratory tract, gastrointestinal tract and skin contact (IPCS INCHEM, 2009). Cholinesterase
enzyme activity measurements have long been used as a biological marker of the organo-phosphate poisoning main case. Salvi et al. (2003) observed that there remains possibility of side effects of organophosphate exposure with small concentration, although the measurement of serum cholinesterase still under normal activity.

Another impact of organophosphate exposure is a blood profile disorder of the living organs. Sipermetrin exposure in rabbits showed a significant reduction in red blood cells and hemoglobin; more over white blood cells and lymphocytes increase significantly (Shah et al., 2007). Blood profile test on pesticide sprayers can be a biological marker to predict the toxicity in human body and early warning from the dangers of organophosphate (Mourad, 2005).

Kelner et al. (1986) studied the erythrocytes exposed by N, N-diethyl-dithiocarbamate (DDC), showed that this compound was not only inhibited the activity of superoxide dismutase but also reduce the function of glutathione, increase the production of methemoglobin and sulfhemoglobin. Glutathione have an important role in the immune system, cell regeneration, antioxidants and antitoxin. The level of glutathione in the body is a biomarker to differentiate healthy people or not.

Batu City is located on 800 meters above sea level. The city surrounded by three mountains, so it has fertile agricultural land, plantations and vegetable centers. Batu City is famous for its apples production with varieties namely Rome, Beauty, Anna and Wangling. Agricultural sector growth rapidly which makes the distribution of livelihood population 23.16% work in the agricultural sector, both men and women. The economic sector by 72% is also derived from agricultural commodities, plantation and vegetables (cultivation, processing, and marketing) (Cornell University, 2013).

One of the high risk groups for high serum cholinesterase and blood profile disorders is Makmur Abadi Apples Plantation Spraying Farmer’s Group. The apple tree must be constantly sprayed with chemical pesticides to avoid fruit flies and pests attack in order to keep apple’s quality. Pesticides poisoning in farmers can be affected by environmental and behavioral factors of the farmers themselves in every contact with the pesticide. The use of pesticides intensively in apple plantation should be monitored to prevent the onset of chronic health problems and death. The symptoms of organophosphate poisoning are not specific even tend to resemble symptoms of common diseases must be anticipated because it’s often considered to fatigue after working conditions.

The aimed of this study was to analyze the effect of organophosphate pesticides exposure to cholinesterase serum activity and white blood cells parameters on apple plantations pesticide sprayer.

**MATERIAL & METHOD**

This study was an observational study with cross sectional design. The data obtained through observation and interviews, as well as assessment of the symptoms from a subject. The factors and effects were measured at the same time. This was analytic study because the variables were analyzed by statistical tests to determine the effect between two goups of exposed sprayer and no exposed.

Population’s exposed group in this study were all farmers who are members of the active spraying Farmers Group Holding Tulungrejo Bumiaji (60 sprayers) and comparison group was people who never exposed to pesticides. The sample size was calculated by using the formula hypothesis of 2 populations and minimum exposure, obtained 23 samples of exposed group and 23 samples of comparison.
group. The sample was randomly selected from exposed and comparison groups.

The dependent variables were the activity of the serum cholinesterase and white blood cells count. Blood samples were taken by health analysts then tested in the Clinical Laboratory of Kimia Farma Malang.

The multivariable analysis determined the overall pesticide exposure factors that have the most influence on the activity of serum cholinesterase and also white blood cells count by using a multiple linear regression with dummy variables.

RESULT

Table 1 showed statistical analysis using multiple regression to test the influence of pesticides exposure on serum cholinesterase activity.

### Table 1. The effect of pesticide exposure on serum cholinesterase activity

<table>
<thead>
<tr>
<th>Variable</th>
<th>B (Regression Coefficient)</th>
<th>( p ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inappropriate doses(*)</td>
<td>4876.678</td>
<td>0.002</td>
</tr>
<tr>
<td>Low Toxicity</td>
<td>-14.030</td>
<td>0.996</td>
</tr>
<tr>
<td>Medium Toxicity</td>
<td>-916.778</td>
<td>0.738</td>
</tr>
<tr>
<td>Spraying Frequency(*)</td>
<td>1147.301</td>
<td>0.017</td>
</tr>
<tr>
<td>Spraying position</td>
<td>-4687.15</td>
<td>0.001</td>
</tr>
<tr>
<td>Working periods</td>
<td>-43.231</td>
<td>0.572(*)</td>
</tr>
<tr>
<td>Length of Works</td>
<td>-194.408</td>
<td>0.611</td>
</tr>
<tr>
<td>Use of Personal Protective Equipment</td>
<td>-131.344</td>
<td>0.937</td>
</tr>
</tbody>
</table>

\(*)\) significant at \( p<0.05 \)

It showed that inappropriate dose, frequency of spraying, and spraying position were the most dominant variables to influence the activity of cholinesterase serum with a \( p \)-value (0.002; 0.017 and 0.001). These results concluded that these tree variables affect the activity of the serum cholinesterase.

Table 2 showed statistical analysis to test the influence of pesticides exposure on white blood cells.

### Table 2. The influence of pesticide exposure on white blood cells count

<table>
<thead>
<tr>
<th>Variabel</th>
<th>B (Regression Coefficient)</th>
<th>( p ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inappropriate doses(*)</td>
<td>-1.361</td>
<td>0.283</td>
</tr>
<tr>
<td>Low Toxicity</td>
<td>5.49</td>
<td>0.028(*)</td>
</tr>
<tr>
<td>Medium Toxicity</td>
<td>4.973</td>
<td>0.042(*)</td>
</tr>
<tr>
<td>Spraying Frequency(*)</td>
<td>0.497</td>
<td>0.217</td>
</tr>
<tr>
<td>Spraying position</td>
<td>-0.08</td>
<td>0.945</td>
</tr>
<tr>
<td>Working periods</td>
<td>-0.068</td>
<td>0.309</td>
</tr>
<tr>
<td>Length of Works</td>
<td>-0.736</td>
<td>0.031(*)</td>
</tr>
<tr>
<td>Use of Personal Protective Equipment</td>
<td>0.452</td>
<td>0.754</td>
</tr>
</tbody>
</table>

\(*)\) significant at \( p<0.05 \)

The multivariable analysis with dummy variables used to determine the most dominant independent variables influence the white blood cell count. It showed that the low toxicity, moderate toxicity and long work period were the dominant variables affect the levels of white blood cells with a \( p \)-value (0.028; 0.042 and 0.031). These results concluded that these three variables increased the number of white blood cells.

The average number of pesticide sprayer’s white blood cells count was higher than the comparison group.
DISCUSSION

Effect of Pesticides Exposure on Cholinesterase Serum Activity

Pesticide’s Dose. The amount of pesticide which used to spray the apple plantations measured by units of cc/ha or mg/ha or l/ha. The measurements were made by semi-quantitative because of no re-weighing of the pesticide dose. The use of appropriate dose on the target organisms may reduce the risk of harm to pesticides sprayer (Cornell University, 2013). Determination of the dose on land owned by Farmers Group Member has been converted into a scale more easily by making a substitute pool spray tank with capacity of 250 liters to a single field. Manual dose creating will cause possibly excess dosing unconsciously by assuming a single field which not fit to 1 hectare.

Multivariable test results in Table 1 showed that the recommended dose did not have a significant effect on the serum cholines-terase activity (p=0.002). The use of excessive doses and shorter intervals will potentially inhibit serum cholinesterase activity. Overdosing was caused by inappropriate weighing tools. Farmers should be more careful in mixing pesticides with the use of water-soluble compound. Many farmers who experienced dizziness and nausea when stirring pesticides without using complete PPE (Personal Protective Equipment). Concentrated doses would be more easily absorbed by the body either through inhalation or skin.

Frequency of Spraying. The frequency of spraying had significant effect on serum cholinesterase activity (p=0.017). High spraying interval per week had linear effect on the increasing of sign and symptoms of pesticide poisoning. It mean that once the interval decreasing so that sign and symptom effects will also decreasing. High frequency and short time interval of pesticide exposure on the human body cause higher pesticide residues in the human body (Saeed, 1994).

Organophosphates are irreversible naturally to the serum cholinesterase barriers improving the effects of accumulation in the human body. Apple plantations sprayers did not have interval time to rest from exposed to pesticides because of all year apple growing season. The rainy season further increased the quantity of pesticides spraying that have been sprayed then released from plant.

Personal Protection Equipment Use. The low use of PPE was caused by uncomfortable feel to work because hindered by a variety of tools that attach to the body. High temperature around working area will raise the body temperature, and the PPE may increase uncomfortable condition during at work.

The results of multivariable analysis indicated that the completeness of PPE use did not have significant effect on serum cholinesterase activity. The respondents refused to use the complete PPE as it will interfere with the work and make the body temperature rises. Respondents used a stick when stirring or mixing pesticides so that the hands were not indirectly contacted. The use of sticks was suggested by agricultural officers to minimize toxicity. Respondents can reduce exposure by wearing appropriate PPE as well as protecting sensitive and specific body part to which the pesticide may absorbed.

The position of the body sprayers. The position of the body when spraying was very rarely noticed by sprayers. Sprayers believed that pesticides can be spread evenly to the apple crop was the best spraying position. Multivariable analysis showed that the position of the body had significant relationship with serum cholinesterase activity (p=0.001). Sprayers protected certain parts of the body that were sensitive to pesticide absorption such as the scalp and hair because the apple trees are tall and dense so that they should enter deeper to reach the top of the plant.
**Working period.** Respondents have been working with pesticides since ten years ago because of a family tradition for generations. Multivariable test results indicated that working period did not have significant effect on the activity of the serum cholinesterase ($p=0.992$). Rustia et al. (2010) also mentioned that there was no significant difference between sprayers working $<11$ years and $>11$ years, no respondents who suffered from chronic poisoning. Taruming-keng (2001) mentioned that organophosphate and carbamate pesticides caused health disorder acutely. The recovery is also relatively fast by avoiding from exposure and taking rest so that serum cholinesterase will recover.

**Duration of working.** WHO stated the duration of working which increasing risk to pesticide poisoning was 5 hours per day or 30 hours per week. Respondents generally begin to spray at 07.00 AM in the morning until 12.00 PM. The length of spraying is more associated with acute poisoning directly than chronic poisoning. Organophosphate poisoning symptoms appear rapidly in a few minutes to a few hours and a series of highly progressive symptoms.

The results of multivariable analysis showed that the $p$ value (0.661), which means there was no relationship of work in a day with decrease of serum cholinesterase activity. Respondents said that they took a break at least twice to eat and lie down between the spraying time. Spraying pesticides less than 3 hours and take a break will reduce the risk of acute poisoning.

**Analyses of Pesticides Exposure on White Blood Cells Count**

White blood cells functioned as the immune system by doing phagocytosis against infectious agents that enter the body. Pesticides are one of the chemicals that are very easy to get in and absorbed by the body. This condition may cause interference to organ formation of cells - blood cells in the spinal cord. After leukocytes/white blood cells being formed, it will be transferred to the area of infection/inflammation.

The multivariable test results in table 2 showed there was significant effect of low toxicity exposure ($p=0.028$); moderate toxicity ($p=0.042$) and length of employment ($p=0.031$) against WBC number of respondents. The WBC count in the exposed group was higher than the control group although normality was shown in normal WBC level for adult males as in Figure 1.

The increase in the total number of leukocytes called leukocytosis may occur due to infection, poisoning (chemicals and pharmaceuticals), hemorrhagic acute, acute hemolysis, leukemia, neoplasms, the entry of foreign bodies and trauma. The decrease in leukocytes (leukopenia) may be caused by changes in the bone marrow, ie degeneration, depression, depletion and destruction as well as other conditions such as severe bacterial infection, viral, physical and chemical agents that may cause damage to the bone marrow.

Lu (2006) conducted a study on the flower growers also showed a significant difference to the use of pesticides in one year with an increase in the number of WBC respondents. Long and repeated exposure has potentially to cause abnormalities of hematopoiesis. The increasing number of leukocytes in the study was possibly made due to pesticides which can increase the number of free radicals, triggering oxidative stress in cells and chronic inflammation.

**CONCLUSION**

The use of the recommended dose and frequency of spraying caused effect to the activity of cholinesterase serum. Exposure to pesticides with low toxicity, moderate toxicity and length of work caused effect to increase the number of white blood cells.
REFERENCES


THE EFFECT OF LEAD (PB) AND CADMIUM (CD) EXPOSURE IN PERNA VIRIDIS TO DECREASE THE IQ OF SCHOOL-AGE CHILDREN (CASE STUDY IN KEJAWAN REGION)

Dewi Kurniasih

Engineering Department of Occupational Safety and Health
Politeknik Perkapalan Negeri Surabaya,
Jl.Teknik Kimia Campus ITS - Surabaya Sukolilo
Email: dewi.kurniasih@ppns.ac.id

ABSTRACT

Sewage is a source of pollution to the environment through water and drainage system which sometimes resulted from human activity. One of pollution in water bodies is the influx of heavy metals which will be followed by an increase in the levels of these substances in aquatic organisms and others marine biota. The lead exposure on aquatic organisms, especially in Perna viridis can adversely affect cognitive development and behavior of children in Kejawan Keputih Tambak. This research aimed to determine the results of Pb and Cd in Perna viridis using the AAS (Atomic Absorption Spectrophotometry) procedure with post-test design. The psychological data was measured using in-depth interview.

The AAS results showed that Pb content in Perna viridis of 2.049 ppm or mg / kg was far above the threshold quality standards set by the Rules of BPOM Regulation No. HK.00.06.152.4011, that the Pb content in foods should not exceed 1.5 ppm or mg / kg. Metals content of Cd in Perna viridis was 0.0182 ppm or mg / kg which was still far below the quality standard limits set in the amount of 1 ppm or mg / kg. The results of psychological examination from 15 samples showed that the respondents indicated a level of intelligence were below the average of children at the same age.

In conclusion, there was a relationship between the level of frequency of eating Perna viridis contaminated heavy metals of Pb and Cd to the children psychological outcomes. It showed that the level of intelligence of children eating contaminated Perna viridis were below the average intelligence level and cognitive behavior of children at their age.

Keywords: Lead (Pb), Cadmium (Cd), Perna viridis, Intelligence, Cognitive Behavior

INTRODUCTION

Sewage is a source of pollution for the environment (air, water and soil) that can cause a decline in the quality of the environment and human health. One of pollution in water bodies is the inclusion of heavy metals. This is in line with human activities on land which are also a source of pollutants. One of the animals exposed to the effects of pollution are Perna viridis. Increased levels of heavy metals in the waters will be followed by an increase in the levels of these substances in aquatic organisms and others marine biota. Heavy metals can also be accumulated by aquatic organisms even in low concentrations in the water column. Utilization of this organism as a food ingredient could be harmful to human health. Kennish (1992) found that marine invertebrates and estuaries, especially Mollusca concentrate or accumulate heavy metals in their bodies.
When humans consume an organism that has been concentrating heavy metals for a long time they could be suffering from disability or death. The greater the consumption of marine fish suspected of being contaminated with heavy metals such as lead, the greater the accumulation of heavy metals of lead in the body. Several studies have shown that exposure to lead can adversely affect cognitive development and behavior of children (Rome-Torres et al., 2007, Apostoli et al., 2005).

Kejawen Keputih Tambak is a village in the subdistrict Mulyorejo, Surabaya, the Province of East Java, where the majority of the community were in the middle-class economy. In the area of Kejawan Tambak, almost 80% of the population in this region work as Perna viridis farmers and make Perna viridis as daily consumption. The study was conducted because in Kejawan Tambak the children suffered from the decreased IQ levels (Data Puskesmas, 2014) which was suspected as a result of consuming Perna viridis.

**MATERIAL & METHOD**

This was a laboratory experimental research with the posttest only control design. The laboratory analysis method with techniques of two repetitions (Duplo) for sample shells was carried out. The measurements of heavy metals in Perna viridis/Shellfish were performed by the AAS (Atomic Absorption Spectrophotometry). Having obtained the results then the sample was compared to a threshold value of Pb and Cd levels that can be tolerated in the body that has been set by BPOM No.HK.00.06.1.52.4011 of Determination Limit of Microbial and chemical contaminants in food (1.5 ppm or mg / kg for Pb and 1 mg / kg for Cd). For psychological measure, in-depth interview and several psychological tests were conducted to 15 samples.

The population of children in Tambak Keputih Kejawen was 30 children, but at the time of the study 10 children were not allowed by their families to be included in the study. Several reasons for the lack of participation including the stigma that sample would shame the family, moving from their rented house, etc. In the end only 14 children were willing to participate in this study.

**RESULT AND DISCUSSION**

**Profile of Kejawen**

Kejawen Keputih Tambak is a village in the sub district Mulyorejo - Surabaya, the Province of East Java. After making observations on Kejawan community activities, the majority of them are middle-class economy.

![Figure 1. Kejawen Putih Tambak](image)

Human activity such as industrial activities, households, agriculture and mining to boost the economy can be both positive and negative. Disposal of Industrial Wastewater which is still above the water quality standard of lead content stream polluted city of Surabaya, in some studies found their heavy metal content (Pb) in the biota of the river around the area. This is in line with human activities on land are also a source of pollution, especially in foods that come from the sea. One of them happens to marine life that Perna viridis.

Kejawen White Pond neighborhood, dominated by ponds and most of the residents were fishermen. Almost 80% of
the population in this region worked as farmers of Perna viridis and make Perna viridis as daily consumption. The study was conducted because investigators received information that in the area of Kejawan children under five have a decreased IQ levels (data puskesmas, 2014) which suspected as a result of consuming Perna viridis/Green mussels. This study aimed to manage Perna viridis/Green mussels before consumption so that the value of the existing levels of lead can be minimized before consumption.

**Result of Analysis Content Pb and Cd**

Heavy metal content Perna viridis pre-treatment can be explained as follows. In this study, the weight of sample used was the minimum weight limit authorized namely 15 grams. AAS analysis results showed that Pb metal content of 2,049 ppm or mg/kg and Pb levels was far above the quality standard limits set by Regulation BPOM No. HK.00.06.1.52.4011 of Determination Limit of Microbial and chemical contaminants in food is 1.5 ppm or mg/kg. The metals content of Cd amounting to 0.0182 ppm or mg/kg. The range of Cd levels were still far below the quality standard limits set by Regulation BPOM No. HK.00.06.1.52.4011 of 1 ppm or mg/kg. This low concentration of Cd derived from the availability of metal Cd in the water column. This naturally low concentration was allegedly related to the fact that Cd binded to small minerals that easily lifted the base. Cd metal was also used by fishermen to coat the surface of the hull because of its anti-corrosive property.

Acute exposed from cadmium (Cd) causes symptoms of nausea (nausea), vomiting, diarrhea, cramps, muscle, anemia, dermatitis, slow growth, kidney and liver damage, cardiovascular disorders, emphysema and degeneration testicular (Ragan & Mast, 1990). Estimated acute lethal dose (lethal dose) is about 500 mg/kg for adults and effects will appear if the absorbed dose of 0.043 mg/kg per day (Ware, 1989).

Mineral toxicity of lead (Pb) can cause changes in the central nervous system, gastrointestinal disorders and impaired synthesis of red blood cells. The main clinical signs of lead poisoning (Pilliang (2002) in Didid (2009)), namely: the microcytic hypochromic anemia, vomiting, diarrhea, abdominal disorders, increased saliva secretion, decreased body weight and miscarriage. Whereas if exposed to acute by cadmium (Cd) causes symptoms of nausea (nausea), vomiting, diarrhea, cramps, muscle, anemia, dermatitis, slow growth, kidney and liver damage, cardiovascular disorders, emphysema and degeneration testicular (Ragan & Mast, 1990, Alfie 2009).

Estimated acute lethal dose (lethal dose) is about 500 mg/kg for adults and effects will appear if the absorbed dose of 0.043 mg/kg per day (Ware, 1989). Heavy metal content in each location will experience the difference womb. This is due to factors place, season, movement of the wind and current speed, and other activities along the river. Increased heavy metal content received by marine life occurs due to the accumulation of concentration and exposure time. The more the heavy metal content is consumed and the longer the exposure or the content of the received then the effects will be caused will be even greater.

**Result of Psychological Examination**

Economic status of the family’s in Kejawan Keputih Tambak was mostly medium, there were always eating a "full" without thinking about the nutrition content. Most parents have low level of education. This resulted in parents being too focused on his children’s education problems, and tends to ignore their health or nutritional need. Children who live in Kejawan Keputih Tambak almost drop out from school and the average citizen around only educated up to primary school. This contrasts with the government program
where children in the city of Surabaya had to go to school and get a free education up to senior high school. They were only required to learn the Koran, because many parents there who will be questioned in the Hereafter were a religious issue alone. But despite extensive religious education, they did not apply it in their daily life. Children often showed actions that disturb the public welfare such as stealing, fighting, said harshly, drinking alcohol until free sex.

The results of psychological test conducted by three psychologists showed that 14 children in this area have more or less the same problems. It can be concluded the average child who conducted tests have the IQ level below the average for their age. There was discrepancy between age and psychological development. The problem was getting worse because of the lack of attention from the family. Details can be found in Table 1.

Table 1. Psychological analyze for respondents in each range of age

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Total Sampel</th>
<th>Status Psychology</th>
<th>Psychological Analyze</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Subjects age 7-9 years</td>
<td>4 samples</td>
<td>Subjects cannot be regulated, defiant and said rudely. The subjects are very irritable when their wishes are not fulfilled. Besides age 9 years old when the subject was always wetting nap or sleep at night, unable to restrain urinate</td>
<td>The analysis reveals the behavior of non-compliance with the needs of the subjects in the anal phase (toilet training) at the age of 2-3 years. Subjects tend to behave arbitrarily because it has not been able to see the core of the problem which is right and what is wrong. IQ level is below average.</td>
</tr>
<tr>
<td>2</td>
<td>Subjects age 10-12 years</td>
<td>3 samples</td>
<td>Often failing a grade (already 3 times). Do not want to interact with your friends, loner, do not understand write and read properly, often say rude and often beat and defiant.</td>
<td>Analysis obtained the subject is on the level of mentally defective light, meaning that the 10-12 years old ways of thinking just like children aged 6 years and 4 months.</td>
</tr>
<tr>
<td>3</td>
<td>Subjects age 13-15 years</td>
<td>7 samples</td>
<td>His habit is smoking, which began 5th grade, often beat her, often talking to himself angrily and used to solve the problem with the fighting birds &quot;trend doro&quot; and drinking alcohol (cukrik)</td>
<td>Based on the results of the test subjects demonstrated intellectual capacity is below average when compared to his age.</td>
</tr>
</tbody>
</table>

**CONCLUSION**

There was a relationship between the frequency of eating Perna viridis contaminated with heavy metals of Pb and Cd to the child psychological development. It showed that the level of intelligence of children consuming contaminated Perna viridis were below average intelligence level and cognitive behavior of children at their age.

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Gametogenesis Kerang Hijau *Perna viridis*: Studi Kasus Di Teluk Jakarta, Teluk Banten Dan Teluk Lada. Institut Pertanian Bogor: Bogor
FACTOR ASSOCIATED WITH SECTIO CAESAREA (SC) SERVICES IN SITTI KHADIJAH 1 MOTHER AND CHILD HOSPITAL IN MAKASSAR

Ella Andayanie, Nurgahayu

Fakultas Kesehatan Masyarakat Universitas Muslim Indonesia
Email: ella_andayanie@yahoo.com

ABSTRACT

The number of sectio caesarea increased globally. 30 years ago, 1 of the 12 deliveries ended with sectio caesarea. In Indonesia, total deliveries through sectio caesarea (SC) especially in government hospitals is approximately 20-25% of the total number of births. Sitti Khadijah 1 Mother and Child Hospital is one of maternity hospitals which the amount of section caesarea service continues to increase, which is about 40% of service. Giving birth with sectio caesarea performed by various reasons.

The aim of this study was to determine factors associated with the section caesarea service based on knowledge, health workers support and the attitude of health workers in Sitti Khadijah 1 Mother and Child Hospital in Makassar city. This was a quantitative research with cross sectional design. Sample was carried through accidental sampling method with a sample size of 100 patients. Data were analyzed with chi-square test.

The results showed a correlation between knowledge (p=0.019) and health workers support with the performing of section caesarea service (p=0.000). There was no correlation between attitudes of health workers with the the performing of section caesarea service (p=0.332). It is suggested that health workers has to be more open in giving information, and for mothers to be more active to consult with health workers about section caesarea.

Keywords: Sectio Caesarea, Knowledge, Health Workers Support, Health Workers Attitudes

INTRODUCTION

One way of delivery service in giving birth is through Sectio Caesaria (SC), where SC is an artificial labor in which the fetus is delivered through an incision in the abdominal and uterus wall with the terms of the uterus is intact and fetal weight is above 500 grams (Prawiroharjo, 2000). There are many factors that cause a mother decides to give birth through SC, either because of their medical indications or non-medical indications.

The number of sectio caesarea increased globally. 30 years ago, 1 of the 12 deliveries ended with sectio caesarea. In Indonesia, total deliveries through SC especially in government hospitals is approximately 20-25% of the total deliveries, while in private hospitals the number is about 30-80% of the total number of deliveries (Mulyawati, et al, 2011).

Data obtained from the health department of South Sulawesi province found that there were 4,305 cases of SC in 2009 and increased to 8366 cases in 2010. Based on data profile from Sitti Khadijah I Maternal and Child Hospital in 2015, there are 6,801 patients giving birth in Sitti Khadijah I Maternal and Child Hospital. However, the prevalence ratio of giving birth through SC in this hospital continues to increase. This hospital serves approximately 40% SC services, this proves that more and more mothers choose to give birth through SC.
This study aim is to determine the factors (knowledge, health workers support and health workers attitude) associated with the SC service in Sitti Khadijah 1 mother and child Hospital in Makassar city.

MATERIAL & METHOD

This is a quantitative research with cross sectional approach which was conducted from July until September 2016 in Sitti Khadijah 1 mother and child Hospital in Makassar city. Sample in this study consisted of 100 respondents which obtained through accidental sampling technique. Data were conducted by using a questionnaire and then analyzed with SPSS using chi-square test.

RESULT

Respondents general characteristics in this study consist of age category and educational level. Distribution of respondents based on characteristics can be seen in the following table:

a. Age Category
   Age in this study were divided into two categories; risky age and unrisky age. Respondent categorized as risky age if they were <20 or > 30 years old at the time of delivery.

   Table 1. Distribution of respondent based on age category in Sitti Khadijah 1 Mother and Child Hospital in Makassar City

<table>
<thead>
<tr>
<th>Age Category</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risky Age</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>Unrisky Age</td>
<td>69</td>
<td>69</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
   Source: Primary Data 2016

   Table 1 shows that there were 31 respondents (31%) that were in the risky age category, and the remaining 69 respondents (69%) were in the unrisky age category when pregnant.

b. Educational Level
   Education in this study were divided into two categories; high education if the respondent graduated minimum senior high school level and low education if respondent never attended school or only graduated junior high school level.

   Table 2. Distribution of respondent based on educational level in Sitti Khadijah 1 Mother and Child Hospital in Makassar City

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Education Level</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>High Education Level</td>
<td>91</td>
<td>91</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
   Source: Primary Data 2016

   Table 2 shows that there were 9 respondents (9%) who had low education level and as many as 91 respondents (91%) had high education level.

   This study investigates whether there was a relationship between knowledge, support and attitude of health workers with SC services. The relationship between these three variables with SC services outlined in the following tables:

a. The relationship between the level of knowledge with SC services
   Knowledge in this study was referred to the respondents' knowledge about SC services, an indication of what might be experienced and possible risks that might occur during and after the process of SC services. The relationship between the level of knowledge with SC services can be seen table 3.

b. Knowledge Level
   Less 26 61.9 16 38.1 42 100
   Enough 49 84.5 9 15.5 58 100
   Total 75 75 25 75 100 100
   Source: Primary Data 2016
Table 3 shows that from 42 respondents who have less knowledge level, there were 26 (61.9%) of respondents choose to give birth through SC and the remaining 16 (38.1%) of respondents choose to have normal delivery. From 58 respondents who have enough knowledge level, 49 (84.5%) of respondents opted for a SC delivery and the remaining 9 (15.5%) respondents opted for a normal delivery. Statistic results by using chi square test shows that there is a relationship between respondents’ knowledge level with SC service (p-value = 0.019 < α = 0.05).

c. The relationship between health workers’ support with SC services.

Table 5 shows that from 6 respondents who expressed that health workers’ attitude was negative, all choose to give birth through sectio Caesaria. There were 94 respondents who expressed that health workers’ attitude was positive, where 69 (73.4%) of them choose to have SC delivery service and the remaining 25 (26.6%) of respondents choose for a normal delivery. Statistic result using chi-square test showed that there was no relationship between health workers’ attitude with SC service (p-value = 0.332 > α = 0.05).

DISCUSSION

Respondent’s General Characteristics

The results about respondent’s general characteristics on table 1 show that most of mother or as much as 69% were in unrisky age category when giving birth. Based on the interview indicates that medical indication (placenta previa totalis) was the main reason why mother choose SC as their way of giving birth. Medical indication did not allow them to give birth normally. This finding is parallel with the study conducted in Cibabat Hospital, where there were 58 (73.41%) mother
who choose to have deliveries through SC service were in unrisky age category, that was between the age of 20-35 years.

Their reason was also supported by their educational level that shows in table 2, where most of them (91%) were in high education level. There was a link between educational and knowledge level, the higher someone’s educational level, and the higher knowledge level they have. This also applies in health issues, where mother have a fairly good level of knowledge about medical indications they experience when they choose to give birth normally.

Relationship between Variables’ Research
a. Relationship Between Knowledge Level with SC Service
Table 3 shows that 84.5% mother who have enough knowledge level choose delivery through SC, based on the results of chi square test shows that there was no relationship between knowledge level with SC service (p-value=0.019). Data collection result shows that 58% mother have good knowledge related SC. Altough there was 79% of them did not know what factors caused them being recommended to have deliveries trough SC method.

This finding was parallel with research about relationship between mother’s knowledge and attitude in early mobilization after SC in Moerwadi general region hospital (Marfuah, 2012) with p- value=0.000. Based on the results of the study although there were 64% mother knows about complications that can occur during SC delivery, there were still 75% of them still choose delivery through SC caused by conditions that did not allow them to have normal deliveries which were; breech position, previous pregnancy history, entangled baby's umbilical cord, disproportion cepalopelvic and other medical reasons.

This showed that even if the mother knows the effects or complications that may occur during and after SC, they have no other option due to their medical indications. The more they knew about the impact of SC, the more anxiety they will have due to delivery through SC, so SC delivery was the last option for them. This finding was parallel with research about relationship between knowledge about SC with mother’s anxiety in Panti Waluyo Hospital in Surakarta (Hastutu, et al, 2012), where there was significant relationship between knowledge with anxiety post SC.

b. Relationship between Health Worker’s Support with SC Service
Findings in table 4 shows that 57% mothers get support from health workers to have delivery through SC. Chi-square test results shows that there was a relationship between health worker’s support with SC service (p-value = 0.000). These findings was parallel with research regarding obstetrics and gynecologics experts’ role, which indicates that there was significant relationship between obstetrics and gynecologics experts’ role with SC service (Melyetriani, et al, 2012). This suggests that when a mother get support from obstetrician when having checkups, they will have tendency to have delivery through SC. There were several reasons, such as obstetrics technological development such as ultrasound (USG) or fetal monitoring so they can have early detection if there were abnormalities or problems that may hamper the delivery process.

Based on the interview, 75% mother who have deliveries through SC was because of the advice given by health workers, with various reasons such as; disease suffered by the mother, distance between previous delivery was too close, conditions or position of the fetal did not normal, mother's pelvic was small, thin uterus, childbirth history, mother’s age. There were some mothers who had delivery through SC without medical indications because they did not want to feel the pain/trauma of natural delivery.
c. Relationship between Health Worker’s Attitude with SC Service

Table 5 showed that 94% mother said that health workers attitude was positive about SC service. From 75% mothers who have delivery through SC, there were 51.75% of them stated that the health worker’s attitude was positive. Based on the chi square test there was no relationship between health worker’s attitude with SC service (p-value = 0.332). Research’s findings showed that there were 17% mother who had planned to have SC delivery since the beginning of their pregnancy, due to various reasons such as; fear, distance between previous delivery was too close, do not want to feel the pain of normal childbirth, vaginal birth trauma, want to have tubectomy after SC and old age. This conclude that although health workers showed that positive attitude about SC, the mother still choose to have SC service because they have their own reasons.

Findings also showed that positive attitude from health workers was also become a major determinant for a mother to be positive about SC service. 98% mother said that their decision in having SC delivery was because they feel motivated by health workers positive attitude. in other words, health workers attitude has influence in mother decision in having birth.

CONCLUSION

1) There was relationship between knowledge level with SC service (p-value = 0.019).
2) There was relationship between health workers’ support with SC service (p-value = 0.000).
3) There was relationship between health workers’ attitude with SC service (p-value = 0.332).

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Yaeni, 2013. Analisis Indikasi Dilakukan Persalinan Sectio Caesarea di RSUP Dr. Soeradjii Tirtonegoro, Klaten
TRADITIONAL JAVANESE SONG (LULLABY (URU-URU) USING LELO LEDHUNG SONG) BY MOTHER INCREASED THE QUANTITY OF BABY SLEEP

Erlina Suci Astuti*, Wahyuningsri**, Yulis Setiya Dewi***

* Polytechnic of Health, Ministry of Health Malang, Email: erlinasuciastuti@yahoo.co.id (Ph. +62 812-3361-1717)
** Polytechnic of Health, Ministry of Health Malang, Email: wahyu_wung16@yahoo.com
*** Faculty of Nursing, Universitas Airlangga, Email: yulis.sd@fkp.unair.ac.id

ABSTRACT

Quantity of sleep is necessary for the babies for their growth and development because during sleeping metabolism and growth hormon release is more optimal for the babies. Uru-Uru is a traditional Javanesee song uses by mother to help baby to fall sleep easier since long time ago but there was no research conducted to reveal the effect of Uru-uru toward quantity of baby sleep.

The purpose of this research was to study the effect of singing traditional Javanese song (Uru-uru using Lelo Ledhung) toward the quantity of baby sleep. A quasy-experimental study was performed and purposive sampling was used to select respondents. We found 20 babies who were divided into two groups: the treatment group and the control group. The treatment group had been performed songs of Uru-uru by the mother before sleep for 10 days whereas control groups were using a daily common practice for helping baby sleep. Dependent variables were quantity of sleep and time needed to fall asleep while dependent variable was Uru-uru.

The study showed that Babies who had Uru-uru using Lelo Ledhung Song had a better quantity of sleep (p=0.012) and have a better time to fall sleep (p=0.000). These revealed that uru-uru using Lelo ledhung song is a good ways to help babies improves their quantity of sleep and may increase their optimum level of growth and development. A further study may needed to evaluate the effect of Uru-uru using Lelo Ledhung Song toward quality of baby sleep.

Keywords: Uru-uru Song, Quantity of Sleep, Baby

INTRODUCTION

Sleep is a need and one of the ways to optimize the growth of a child, because during sleep time the metabolism increase occurs for the increase and growth of new cell, and also it is the most optimal time of growth hormone discharge (Wong, 2005). A study in Ohio showed that one of ten children under 3 years experiences the sleep disorder (Ibu dan Balita, 2013).

Baby’s sleep time needs a calming atmosphere and it is a good way to calm them down. A calming atmosphere can be done by making the stimulation for children. Hearing is the primary optimal sense of babies, that is why the calming atmosphere can be given by providing sound stimulation. The best and appropriate sound for a baby is his mother’s voice (Juwardono, 2010). The act of lullaby or singing a quiet song to lull a child to sleep has actually been done by
mothers, especially in Java, but seeing that technological development grows rapidly. These activities is rarely encountered. This is due to the incessant research publications using media such as western music and certain music that sometimes not everyone is able to do because it requires knowledge and financial preparation. Beside that, the demands of the era development leads the dynamics of life quickly, so that many mothers earn a living with tiredness when they get home. This condition makes time for the child reduced mainly for bringing their child to go bed.

Auditory stimulation by mother using soothing voice will make the baby quiet because the sound that enters the ear will vibrate the eardrum, fluid in the inner ear shake and vibrate the hair cells in the cochlea to the next through the cochlear nerve to the brain. The sound will be received by the thalamus, which is a part of the brain that regulates emotions, sensations, and feelings; otherwise it will affect the sound sensation in the thalamus Hypothalamus. Effect of relaxing music is emotional control. Controlled emotions and feelings will make the baby feel calm, relaxed and no fuss/cry resulting in lower energy usage resulting infant and baby will sleep soundly. Unfortunately there was no research has been done related to the effect of a lullaby using Javanese traditional song (Uru-uru using Lelo Ledhung Song) to the quantity and hours of babies to fall asleep. This research aimed to explore the effect of Lullaby uru uru using Lelo Ledhung song toward quantity of baby sleep.

MATERIAL AND METHOD

The population in this study were infants aged 0-6 months in Rampal Claket village, Puskesmas Rampal Claket Malang in September 2015. The number of infants with those ages in the village Rampal Claket was 35 infants. Criteria samples in this study were: infants (0-6 months), term born infants, Javanese, only with nutrition breast milk infants, not experienced serious health problems (sick), mothers were able to sing Javanese lullaby Lelo Ledhung, parents allowed their children to be the respondent of this research by signing a consent form after receiving an explanation (informed consent). The number of samples was appropriate with inclusion criteria, they were 20 infants.

The design of this research was a quasi experiment where there were two group of babies, one group had been performed Lullaby (Uru-uru) whereas the other was not. The researcher observed the infants’ sleep quantity of a group with the act of giving lullaby before sleeping, and the control done as mothers usually do within 2 weeks. The sampling technique used was the total sampling.

RESULT

Sleep Quantity of Infant Respondents

Respondents of on-treatment groups before being sung with song Lelo ledhung tended to have the number of sleep hours that was less than the needs according to their age that was nine respondents (90%), while those with enough sleep hours were 10%. After the treatment, 50% of respondents had enough sleep quantity and 30% had less sleep quantity.

All respondents in controlled group in day-1 had a number of sleep hours less than with the need (100%). The result of the controlled group observed on Day 10 was all respondents who did not have an increased quantity of sleep, although there were respondents who still had less quantity of sleep though there were some respondents who had increasing number of sleep hours. The effectiveness of lullaby with the song Lelo Ledhung towards the infants’ sleep quantity using Wilcoxon statistical test can be seen on table 1.
Table 1. Statistics analyzes of lullaby with the song *Lelo Ledhung* towards the infants’ sleep quantity

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Group</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>On-treatment</td>
<td>controlled</td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>0.015</td>
<td>0.317</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>2.2</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>0.919</td>
<td>0.632</td>
<td></td>
</tr>
</tbody>
</table>

The time to fall asleep of Baby Respondents

All respondents of on-treatment group before sung with song *Lelo Ledhung* tended to had the rapidity of sleep start time more than 20 minutes (100%). After treatment, all respondents had the sleep start time less or equal to 10 minutes. All respondents of controlled group before day-1 and the tenth day had the rapidity of sleep start time more than 20 minutes (100%).

The effectiveness of lullaby with the song *Lelo Ledhung* towards the rapidity of sleep start time of respondents using Wilcoxon statistical test can be seen on table 2.

Table 2. Statistics analyzes of lullaby with the song *Lelo Ledhung* towards the rapidity of sleep start time

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Group</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>On-treatment</td>
<td>controlled</td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>0.015</td>
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<tr>
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<td>2.2</td>
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<td></td>
</tr>
<tr>
<td>SD</td>
<td>0.919</td>
<td>0.632</td>
<td></td>
</tr>
</tbody>
</table>

The effectiveness of lullaby with the song *Lelo Ledhung* towards the sleep quantity of On-treatment and Controlled Group based on Mann Whitney statistical test can be seen on table 3.

Table 3. Statistics analyzes between two groups

<table>
<thead>
<tr>
<th>Parameter</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep quantity</td>
<td>0.012</td>
</tr>
<tr>
<td>Sleep start time</td>
<td>0.000</td>
</tr>
</tbody>
</table>

DISCUSSION

The Effect of Mother's Lullaby towards sleep Hour Quantity

The number of sleep hours or sleep quantity in all respondents either in the on-treatment group or the controlled group was less. They had less sleep hours according to their age with the number of 1-2 hours a day. The less on respondents’ needs of sleep can be caused by the environment. According to Yulvitravash (2011), one of the factors that affect sleep is a quiet and comfortable environment. Respondents in the research were in an urban environment with narrow and crowded houses. This situation produced noise sound, poor air circulation/hot, so that the children often awakened and even being fussy because the environment is less comfortable. Besides the weather in September and October 2015 were relatively hotter. Besides, all respondents got breast milk. The breast-fed infants will often awaken to be fed because of the nature of breast milk is easily absorbed so that the baby is often hungry.

After the number of sleep hours of the on-treatment group increased efficiently, 2 respondents had enough sleep hours and 5 respondents had sleep hours more than enough/good. The fact of other studies found that there were 3 respondents who were still less his needs of sleep. Although they still had less sleep hours, they have already had the increase in terms of the hours that respondent number 1 from 13.2 hours increased to 15.06 hours (almost as needed according to his age i.e. 15.3 h), also for respondent number 3 from 11.5 hours to 14.1 hours and respondent number nine from 13 hours to 14.3 hours. The analysis data of Wilcoxon showed p = 0.015, means that Java song *Lelo Ledhung* affected the increase of the number of sleep hours.

Hearing is the primary optimal sense of babies, that is why the calming atmosphere can be given by providing...
sound stimulation. The best and appropriate sound for a baby is his mother's voice (Juwardono, 2010). Auditory stimulation of mother’s calming voice will make the baby calm because the sound that enters the ear will vibrate the eardrum, shake fluid in the inner ear and vibrate the hair cells in the cochlea to the next through the cochlear nerve to the brain. The sound will be received by the thalamus, which is a part of the brain that regulates emotions, sensations, and feelings, otherwise it will affect the hypothalamus sound sensation. The effect of music on the thalamus is emotional control. The controlled emotions and feelings will make the baby feel calm, relaxed and no fuss/cry so that decrease the use of babies’ unnecessary energy infant and babies will sleep soundly.

The Effect of Mother’s Lullaby towards Sleep Time Rapidity (time needed to fall sleep)

Respondents in both previous study groups had time to fall asleep rapidity above 20 minutes. The phases of sleep of non-REM infants on phase 1 occurred when they felt sleepy and started to fall asleep. Electrical brain waves showed alpha waves with the voltage drop. This Phase I lasted 30 seconds until the first five minutes of the sleep cycle Yulvitrawasih (2011). This condition may make mother exhausted because almost all respondents had a habit before bedtime of being carried by mother, and to be able to lay the babies down, mother had to wait to enter the third phase of non-REM phase that took 40 minutes after the first phase of non-REM.

The sleep time rapidity of on-treatment groups after being given Lullaby became faster that is less or equal to 10 minutes. Likewise, the results of the analysis of Wilcoxon shows p = 0.015, means that Java lullaby with the song Lelo Ledhung affected the rapidity of banies’ sleep time. The auditory stimulation of mother’s voice will make babies calm and easy to pass non-REM stages of sleep phase I. These condition will be favorable for mother because mother did not take time to lay her baby down, reducing fatigue so she has more time to do other tasks or increase her time to rest.

CONCLUSION

1) Javanese lullaby with the song Lelo Ledhung effected to quantity of sleep of the baby.
2) Javanese lullaby with the song Lelo Ledhung effected to time sleep rapidity (time to fall sleep).

RECOMMENDATION

1) Primary Health Center (Puskesmas) may introduce Javanese lullaby with the song Lelo Ledhung song to nowdays mother to increase the quantity of sleeps and time sleep rapidity (time to fall sleep).
2) For further research may be conducted to study introduce Javanese lullaby with the song Lelo Ledhung song to ward quality of sleep of the baby.

REFERENCES

ABSTRACT

Phenylephrine Hydrochloride 10% topical eye drops can cause systemic effects to the body system which often has not been recognized nor anticipated. Phenylephrine is a sympathomimetic drug that stimulates the receptor α1 directly and can affect the cardiovascular system including blood pressure. Unfortunately, there was a limited study conducted to evaluate Phenylephrine Hydrochloride 10% topical eye drop on patients with cataract.

This research aimed to study the effect of Phenylephrine 10% eye drops towards blood pressure. A pre-experimental study was used with pre-post test design and a simple random sampling was performed to select respondent. This study conducted to 25 patients with cataract in the outpatient ward in Tarakan General Hospital. Dependent variable of this study was blood pressure whereas independent variable was administering Phenylephrine 10% eye drops. Both the result of pre and post test was statistically analyzed using independent t test.

This study revealed that administering Phenylephrine 10% eye drops provided a significant effect to systolic blood pressure (p=0.0005) and diastolic blood pressure (p=0.004). This study showed that Phenylephrine 10% administration increased systolic blood pressure and increased diastolic blood pressure for 4.2 mmHg and 2.64 mmHg in average respectively. The increasing of systolic blood pressure was higher compare to diastolic blood pressure due to the Phenylephrine 10% eye drops mostly work on peripheral blood vessel. This medicine should be carefully administered to cataract patients with hypertension.

Keywords: Phenylephrine Hydrochloride 10%, Blood Pressure, Cataract

INTRODUCTION

Pharmaceutical product for eyes topically applied mostly in the form of eye drops. A common misunderstanding is that the eye drops do not result in systemic side effects in the eye that has poor systemic absorption. Once placed on saccus conjunctiva, amounts of drugs becomes significant in systemic absorption and may cause systemic adverse side effects. Medications given to the eye through the nasolacrimal duct will flow quickly, then as many as 80% of the drug is absorbed through the nasal mucosa and go into the systemic circulation without metabolized by the liver first (Katzung, 2003).

In addition, drugs penetrated into the eye are eliminated from the anterior chamber through the bloodstream to the Schlemm canal, from the vitreous to the anterior (rear chamber) and posterior through the blood vessels of the retina, eventually will lead to the systemic circulation. This effect is often not
anticipated, recognized, or treated appropriately (Shiuey & Eisenberg, 1996). Pupil dilatation is a regular part of a comprehensive eye examination. Phenylephrine 10% is often used as mydriatic in the field of eye for diagnostic and therapeutic purposes. The advantages of Phenylephrine are relatively fast onset and long duration of action. However, the high incidence of adverse effects with the use of Phenylephrine 10% reduced with low concentrations. Systemic reactions increase with the frequent use and when it is administered in the pledget form.

There is a controversy about the concentration of topical Phenylephrine which is recommended for diagnostic or therapeutic mydriatic. Samantary and Thomas (1975) reported a significant increase in blood pressure after topical use of Phenylephrine in all cases. Kumar et al. (1985) concluded that the average blood pressure is higher by 10% Phenylephrine. Kenawy & Jabir (2003) showed a statistically significant increase of systolic blood pressure in 10% Phenylephrine Hidrocloride group. Mathew et al. (2004) concluded that Phenylephrine 10% significantly alter perioperative blood pressure.

Given the reports of studies that contradict the systemic effects, especially against cardiovascular i.e., on blood pressure, the use of Topical Phenylephrine 10% and the controversy about the concentration of topical Phenylephrine recommended for diagnostic or therapeutic mydriatic, this study proposed to assess the effect of Phenylephrine hydrochloride 10% on blood pressure.

MATERIAL & METHOD

This study used one group pretest-posttest design method. This research was conducted at the outpatient Unit for Eyes in Tarakan Hospital in January to March 2004. The respondents of this study were patients with cataract who visited the Outpatient Unit for Eyes of Cataract Division, which had been conducted a diagnostic of pre-cataract surgery for three months. The samples were respondents who had met the inclusion criteria. The sampling technique was simple random sampling. The samples of the experiments were as much as 25 respondents.

The inclusion criteria for this study were patients with age 30-70 years, the patients who conducted a diagnostic of pre-cataract surgery, and willing to participate in the study after informed consent. The criteria for exclusion were the respondents with a shallow anterior chamber or a history of glaucoma; those who used inhibitor drugs: monoamine oxidase, anticholinergics, beta-blockers, reserpine, guanetidin, methyldopha; those with systemic diseases such as cardiovascular disease, diabetes with diabetic retinopathy, CVA; those who used topical ocular medicines, except artificial tears; those with active abnormalities affecting the eyelids, lacrimal system, conjunctiva and cornea; and contact lens wearers.

RESULT

Characteristics of Respondents

The youngest respondent was 30 years old and the oldest ones was 70 years old. The average age of respondents in this study was 52.12±12.53 years old. If grouped into several categories, the age distribution of respondents obtained as follows.

Table 1. Distribution of Respondents by Age

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>Frequency (x)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-39</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>40-49</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>50-59</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>≥ 60-70</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 2. Distribution of Respondents by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency (x)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>13</td>
<td>52</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
<td>48</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 3. Distribution of Respondents by Other Disease

<table>
<thead>
<tr>
<th>Disease</th>
<th>Frequency (x)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nothing</td>
<td>22</td>
<td>88</td>
</tr>
<tr>
<td>Hypertension Stage 1</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Type 2 DM without Retinopathy</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>100</td>
</tr>
</tbody>
</table>

Changes in Blood Pressure

1) Changes in systolic blood pressure before and after administration of phenylephrine hydrochloride 10% eye drops

The study results showed that the minimum and maximum systolic blood pressure before administration of Phenyl-ephrine was 95 mmHg and 150 mmHg with a mean of 123.52±16.56 mmHg. The minimum and maximum systolic blood pressure after administration of Phenylephrine Hydrochloride 10% topical eye drops was 105 mmHg and 152 mmHg with a mean of 127.72±15.89 mmHg. The magnitude of mean changes of systolic blood pressure was 4.20±5.42 mmHg. The distribution of changes in systolic blood pressure was varied. There was an increase in systolic blood pressure in 20 respondents (80%), a decrease in three respondents (12%), and unchanged at 2 respondents (8%). There was a significant changes in systolic blood pressure between before and after administration of Phenylephrine Hydro-chloride 10% topical eye drop (p=0.0005).

2) Changes in Diastolic Blood Pressure before and after Administration of Phenylephrine Eye Drops 10%

The result of the examination stated that minimum and maximum diastolic blood pressure before administration of Phenylephrine Hydrochloride 10% topical eye drop was 61 mmHg and 90 mmHg with a mean of 74.80±8.79 mmHg. The magnitude of mean changes in diastolic blood pressure was 2.64±4.60 mmHg. The distribution of changes in diastolic blood pressure varies. There was an increase in diastolic blood pressure in 14
respondents (56%), a decrease in 1 respondent (4%), and unchanged in 10 respondents (40%). There was a significant change in diastolic blood pressure increase before and after administration of Phenylephrine Hydrochloride 10% topical eye drop (p=0.004).

Table 6. Diastolic Blood Pressure Before and After Administration of Phenylephrine

<table>
<thead>
<tr>
<th>Times</th>
<th>n</th>
<th>Diastolic Blood Pressure</th>
<th>t Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean (x)</td>
<td>SD</td>
</tr>
<tr>
<td>Before administering Phenylephrine Hydrochloride 10% topical eye drop</td>
<td>25</td>
<td>74.80</td>
<td>8.79</td>
</tr>
<tr>
<td>After administering Phenylephrine Hydrochloride 10% topical eye drop</td>
<td>25</td>
<td>77.44</td>
<td>8.46</td>
</tr>
<tr>
<td>Changing in systolic blood pressure</td>
<td>25</td>
<td>2.64</td>
<td>4.60</td>
</tr>
</tbody>
</table>

Table 7. The Changes of Diastolic Blood Pressure Before and After Administration of Phenylephrine Hydrochloride 10% Topical Eye Drop

<table>
<thead>
<tr>
<th>Changes of diastolic blood pressure</th>
<th>Frequency (x)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Remain steady</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Increase</td>
<td>14</td>
<td>56</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>100</td>
</tr>
</tbody>
</table>

**DISCUSSION**

Phenylephrine hydrochloride with a concentration of 10% is used widely as mydriatic for various indications in the field of the eye. Phenylephrine which is absorbed will go to the systemic circulation so that causes systemic effects. This systemic effect was first proposed by Heath (1936) who reported that there was an increase in systemic blood pressure by 50 mmHg after administration of 3 mg Phenylephrine in powder form on the cornea of a dog (Tang et al. 1997).

In some recent cases report, there was a fatal case as a result of the use of Phenylephrine. Lai (1989) reported the case of a man aged 57 years with total retinal detachment with the surgery performed under general anesthesia suffered severe hypertension (260/120 mmHg) after being given a 10% Phenylephrine eye drops for four times in a preoperative with intervals of 30 minutes and in an intraoperative for 4 times.

Fraunfelder et al. (2002) reported 11 cases of Phenylephrine 10% use in the form of pledget, obtained cardiac arrest complications on 3 individuals, pulmonary edema on one individual, subarachnoid hemorrhage on two individuals, CVA on one individual, ventricular fibrillation on one individual, and severe hypertension on 9 individuals. Weisberg (1993) reported 1 case of a woman aged 72 years experienced intracerebral hemorrhage in the thalamus part after receiving 1 drop of Phenylephrine 2.5% and 1 drop of tropicamide 1% on each eye.

This study used eye drops Phenylephrine with a concentration of 10% for the commercial preparations were commonly obtained and all subjects in this study were dark irised individuals. In Phenylephrine 10%, 1 ml of the drug contains 100 mg Phenylephrine. The size of the medicine dropper in this study is not known for certain. The average size of the medicine dropper is 25-50 mL, but the cul-de-sac on the eye is only capable to hold 25-30 mL drugs, so drugs that can be accommodated as much as 2.5-3 mg (assuming 1 ml is equivalent to 20 drops).

The total dose we use were 2 drops, so it is equivalent to 5-6 mg of the drug. When it is considered that drug absorbed as much as 80% heading into the systemic circulation, then will be obtained 4 to 4.8 mg of Phenylephrine in plasma. The dose exceeds the limit of the highest safe dose given intravenously, which is in the
amount of 1.5 mg (Bartlett and Jaanus 2008, Fraunfelder et al., 2008)

It is hard to predict the effectiveness in plasma concentration of Topical Phenylephrine given to the eye. Various factors influence the absorption of topical drugs. These factors include time of medicine delay in tears, bonding and metabolism of drug by tissue proteins and tears, diffusion through the structure of ocular and naso-lacrimal drainage (Lee 1993).

Time of blood pressure examination after Phenylephrine dropping which is selected in this study was 30 minutes, because this period is a time in which the pupil is dilated to the maximum level and it is assumed that the drug has reached the systemic circulation at that time point (Tang et al. 1997). In one study, 60 patients were given eye drops application of Phenylephrine 10% 3 times at intervals of 10 minutes for each eye. Thirty minutes after the last drop, there was an increase of systolic blood pressure occurs for 10-40 mmHg and diastolic blood pressure for 10-30 mmHg in all subjects. In each case there was a decrease of pulse rate in 10-20 beats/min.

Characteristics of Respondents

1) Age

The average of age of respondents of this study (52.12±12.53 years) is almost the same with that of the research of Yospaiboon et al. (2004), which is 49.93±17.03 years in the group of Phenylephrine 10% and 52.37±16.46 years in the group of Phenylephrine 2.5% (Yospaiboon et al., 2004).

In this study, the characteristics of the age do not affect the systemic effects caused by administration of eye drops Phenylephrine 10%. The age of respondents is limited to 70 years considering several case reports of administration of Phenylephrine that causes severe cardiovascular complications which mostly occurred at the age of 70 years (Lai 1989).

2) Gender

Gender of this research respondents is almost the same with the research of Škunca et al. (2003), consisted of 55.1% males and 44.9% females. Gender characteristics in this study do not give effect to the systemic effects due to the administration of eye drops Phenylephrine 10%. In other studies, it is not explained if the characteristics of the gender influence or not to the systemic effects of Phenylephrine administration.

3) Morbidities

There are some researchers who divide respondents into groups of normotensive and hypertensive, among others are Chin et al. (1994), Tang et al. (1997). Although the study did not specifically categorize respondents with or without disorder, there were respondents with morbidities of hypertension stage 1 and diabetes type 2 without diabetic retinopathy. It is similar to the research of Brown et al. (1980), in which there were subjects with hypertension in the Phenylephrine group for about 23% and the control group for about 30% and diabetes type 2 in each group for about 10% (Brown et al., 1980).

The inclusion criteria were restricted to blood pressure ≤ 150/90 mmHg because of it can be performed in Outpatient Unit without the availability of life saving equipment that will be needed in case of complications such as hypertensive crisis which was life-threatening after being treated. Moreover, the inclusion criteria restricted to DM without diabetic retinopathy due to the duration of diabetes that may be the most powerful predictor of to the development and progression of retinopathy, as well as the incidence of retinopathy correlated significantly with the prevalence of complications related to other diabetes (Cohen et al., 1998, Fong et al., 2004).

In this study, there were only three respondents accompanied by systemic disorders, so that it was difficult to analyze whether or not the morbidities
influenced by the systemic effects of Phenylephrine 10% administration.

**Blood Pressure Changes**

1) Changes in Systolic blood pressure before and after administration of Phenyl-ephrine Eye Drops 10%

In this study, there were variations in systolic blood pressure change between before and after the administration of Phenylephrine. The highest increase of systolic blood pressure was 20 mmHg, the highest decline was 5 mmHg. There were some respondents who did not have systolic blood pressure changes. These results are appropriate with Kenawy and Jabir (2003) who reported significant increases in mean of systolic blood pressure of 34.4 mmHg (normotensive group) and 22.8 mmHg (hypertension group) in the group of Phenylephrine 10% (Kenawy & Jabir 2003).

It was different with the research of Malhotra et.al. (1998) which revealed no significant changes in blood pressure due to the topical administration of Phenylephrine 2.5% and 10%, it stated that there were differences between the mean of systolic blood pressure which were not statistically significant between before and after the administration of Phenylephrine. Yospaiboon et al. (2004) showed that the mean of systolic blood pressure increases was not significant to the group of Phenylephrine 2.5% and 10%; this may be related to a single dose given so that Phenylephrine concentrations were too low to cause significant systemic effects (Malhotra et al., 1998, Suwan-apichon et al., 2010, Yospaiboon et al., 2004).

The results of this analysis states there is a significant change in systolic blood pressure between before and after treatment. The existence of those variations can be caused by many factors, among others are blinking reflex on the subject, drug dilution by lacrimation, drug interaction on the subject suffering diabetes type 2 and hypertension.

Variations in measurements can also be affected by anxiety, bladder distends, and talking that can increase blood pressure. Noisy environment, eating food before examination can cause lower blood pressure.

2) Changes in Diastolic Blood Pressure Before and After the administration of Phenylephrine Eye Drops 10%

This study also found various changes in diastolic blood pressure between before and after the administration of Phenylephrine. The highest increase of diastolic blood pressure was 16 mmHg, the lowest decline was 5 mmHg. There were some subjects with no changes in diastolic blood pressure.

These results were in line to the research of Kenawy and Jabir (2003), which revealed significant increases in mean of diastolic blood pressure that was 10.5 mmHg (normotensive group) and 16.8 mmHg (hypertension group) in the group Phenylephrine 10% (Kenawy & Jabir 2003). Yospaiboon et al. (2004) showed that the average increase in diastolic blood pressure was not significant in the group of Phenylephrine 2.5% and 10% (Yospaiboon et al., 2004).

The results of this study suggested that there is a significant change in diastolic blood pressure between before and after treatment. These variations can be caused by many factors. Factors that influence the diastolic blood pressure are similar as the factors affecting systolic blood pressure.

The significant difference in value of systolic and diastolic blood pressure in which the value systolic blood pressure is higher than diastolic one can be understood as Phenylephrine gives more influence on arterial pressure.
CONCLUSION

From research on the effect of Phenylephrine hydrochloride 10% eye drops on blood pressure in Outpatient Unit of Eye Division of Cataract in Tarakan Town, East Kalimantan, the conclusion can be drawn that the administration of Phenylephrine hydrochloride 10% eye drops significantly increase the systolic and diastolic blood pressure.

REFERENCES


SURVIVAL ANALYSIS: THE FACTORS ASSOCIATED TO THE MORTALITY OF HIV-TB PATIENTS

I Wayan Gede Artawan Eka Putra1,2,*, I Made Sutarga1, Pasek Kardiwinata1, Putu Suwayani1, Ni Wayan Septarini1, Made Subrata1

1School of Public Health, Faculty of Medicine, Udayana University
2Doctoral Student, Faculty of Public Health, Airlangga University
Email: gedeartawan@unud.ac.id

ABSTRACT

The Prevalence of HIV among TB patients in Denpasar City has increased from 8.8% to 16.8% in 2013. The mortality of TB patients also increased from 7.9% to 10.2% which is 35.1% of them died because of HIV-TB co-infection. This fact shows that HIV-TB and its impact in improving mortality should get priority. This study aimed to identify factors associated to the mortality of HIV-TB patients.

This study is a longitudinal study based health facilities. The study populations were all HIV-TB patients who seek treatment at public health facilities in Denpasar City on the follow-up until 2014. The total samples were 260 patients. All the variables obtained from the integrated information system for tuberculosis. Data analyzed using Kaplan-Meier survival estimates and Cox regression.

The median age of subjects was 32.5 years, males (74.6%), discovered and treated in hospitals (87.7%) and the others in public health centers (PHC). The survivor rate is 75% or the mortality until end of observation (8 months) is 25%. The risk of death of HIV-TB patients who are identified and treated in a hospital 2,795 times compared to PHC, pulmonary TB 2.143 times compared to extra pulmonary, New HIV-TB patients 0.584 times (protective) than others (history defaulters treatment, failure, chronic and relapse) and the risk of death of HIV-TB patients who was HIV detected earlier 0.68 times (protective) than TB is detected after HIV.

These results show the importance of early detection and prompt treatment of HIV-TB patients in primary health care. TB patients with the HIV risk factor should get adequate counseling and continue to HIV testing. Treatment monitoring of TB patients is very important to ensure regularity, preventing lost to follow-up, relapse, and treatment failure and chronic.

Keywords: HIV-TB Patients, Mortality, Risk Factors, and Survival Analysis

INTRODUCTION

Tuberculosis (TB) is an opportunistic infection that most often occurs in people living with HIV (PLWH). Opportunistic infections of TB may occur as reactivation of latent infection or a new infection (primary) due to the decrease of immune system and interactions with TB patients. Base on the WHO Global Report on Tuberculosis 2011, in 2010 there were 1.1 million new TB cases with HIV positive status and the number of TB patients died related HIV was 350 thousand or 31.8% (WHO 2011).

Based on the data from the Ministry of Health, In Indonesia until December 2010 there were more than 24 thousand cases of AIDS and 49% of them with TB opportunistic infection (more than 11
thousand). Moreover the prevalence of HIV among TB cases was also high, more than 3% or 4 time compare to general populations. HIV epidemic affected to the increase of the TB epidemic in the world, including Indonesia. TB is one of major challenge on management of people living with HIV/AIDS (PLWH) and HIV also is one of the priority issues in TB control programs (Ministry of Health RI 2012). Studies in worldwide shows that the risk of that among HIV-TB co-infection are higher compare to TB without HIV (CDC 2010; Manda et al. 2014; Domingos et al. 2008).

Bali Province is a province that has been quite successful in TB control programs, but the increasing HIV/AIDS prevalence will affect to the increasing of TB cases in the community and increasing mortality due to TB infection. Districts/cities with the highest TB case notification rate (CNR) and the highest burden of HIV infection is Denpasar City. Based on the data of HIV positive cases in HIV-TB collaboration programs found an increasing prevalence of HIV positive cases from 8.8% in 2011 to 13.7% in 2012 and 16.8% in 2013. The mortality of TB patients in the city of Denpasar also increased from 7.9% in 2011 to 10.2% in 2012. Moreover, 25.8% in 2010 and 35.1% in 2012 of them died related to HIV-TB co-infection. The data shows that the problem of HIV-TB co-infection and its impact in improving mortality should get priority (Health Office of Bali Province 2012).

The aimed of this study was to describe the characteristic of HIV-TB patients, calculate the survivor rate and identify the factors associated to the mortality of HIV-TB patients.

**MATERIAL & METHOD**

We performed a longitudinal study based health facilities, conducted from August to November 2014 in Denpasar City. The population in Denpasar 2014 was 863,600. In 2014 more than 1300 TB cases were registered, 44% of them were smear positive. Health facilities in Denpasar consist of 11 public health centres 3 public hospital including 1 hospital as centre of referral in Bali Province. All of these health facilities use the WHO-recommended Directly Observed Therapy Short course (DOTS) strategy on TB management. Case treatment and the monitoring and reporting system follow WHO guidelines (Ministry of Health Republic of Indonesia 2014).

The populations of this study were all HIV-TB patients who seek treatment at PHC and Hospital in Denpasar on the follow-up until 2014. We did not calculate minimum sample size because we targeting to analyse all data of HIV-TB patients (total populations sampling). After excludes uncompleted data, total samples were 260 patients.

All data that used were secondary data. Data of the variables obtained from the integrated information system for tuberculosis. Data extracted from the data base as row data in Microsoft excel format and transferred to Stata format. Data was analysed using Kaplan-Meier survival estimates and Cox regression (Kleinbaum & Klein 2005). The ethical clearance was obtained from The Ethical Committee of Faculty of Medicine, Udayana University.

**RESULT**

There are 260 eligible subjects, with median of age was 32.5 years, 74.6% males, 87.7% discovered and treated in hospitals and the others in public health centers (PHC). Most of subjects were pulmonary TB (88.8%) and among pulmonary TB, 71.4% were smear negative TB (Table 1).
Table 1. The Respondents Characteristic

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>(n=260)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>32.5 (28-39.5)</td>
</tr>
<tr>
<td>&lt; 45 y.o</td>
<td>223 (85.8)</td>
</tr>
<tr>
<td>≥ 45 y.o</td>
<td>37 (14.2)</td>
</tr>
<tr>
<td>Sex</td>
<td>66 (25.4)</td>
</tr>
<tr>
<td>Female</td>
<td>194 (74.6)</td>
</tr>
<tr>
<td>Health Facilities</td>
<td></td>
</tr>
<tr>
<td>Public health centers</td>
<td>32 (12.3)</td>
</tr>
<tr>
<td>Hospital</td>
<td>228 (87.7)</td>
</tr>
<tr>
<td>TB Classification</td>
<td></td>
</tr>
<tr>
<td>Extra pulmonary</td>
<td>29 (11.2)</td>
</tr>
<tr>
<td>Pulmonary</td>
<td>231 (88.8)</td>
</tr>
<tr>
<td>Smear result</td>
<td></td>
</tr>
<tr>
<td>(n=231)</td>
<td></td>
</tr>
<tr>
<td>Smear -</td>
<td>165 (71.4)</td>
</tr>
<tr>
<td>Smear +</td>
<td>66 (28.6)</td>
</tr>
</tbody>
</table>

The survivor rate of HIV-TB patients was 75% or the mortality until end of observation (8 months) is 25% (Figure 1.).

![Figure 1. Kaplan-Meier Survival Estimate HIV-TB Patients in Denpasar City](image1)

The survivor rate of HIV-TB patients who identified and treated in PHC is better than in hospital (Figure 2) or risk of death among HIV-TB patients who are identified and treated in a hospital 2,795 times than in the PHC (Table 2). The survival rate of extra pulmonary TB is better than pulmonary TB (Figure 3) or risk death pulmonary TB 2,143 times compared to extra pulmonary. The risk of death of new HIV-TB patients 0.584 times (protective) compare to others (history defaulter treatment, failure, chronic and relapse) and the risk of death of HIV-TB patients who was HIV detected earlier 0.68 times (protective) than TB is detected after HIV (Table 2).

![Figure 2. Kaplan-Meier Survival Estimate by Type of Facility Among HIV-TB Patients in Denpasar City](image2)

![Figure 3. Kaplan-Meier Survival Estimate By TB Classification Among HIV-TB Patients In Denpasar City](image3)

Table 2. The Results of Multivariable Factors Associated to The Mortality of HIV-TB Patients Analysis using Cox Regression

<table>
<thead>
<tr>
<th>Variable</th>
<th>Hazard Ratio (HR)</th>
<th>95% Confident Intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Lower level</td>
</tr>
<tr>
<td>Hospital</td>
<td>2.795</td>
<td>1.042</td>
</tr>
<tr>
<td>Pulmonary TB</td>
<td>2.143</td>
<td>0.792</td>
</tr>
<tr>
<td>New patients</td>
<td>0.584</td>
<td>0.315</td>
</tr>
<tr>
<td>HIV detected earlier</td>
<td>0.680</td>
<td>0.418</td>
</tr>
</tbody>
</table>

153
DISCUSSION

The survivor rate of HIV-TB in Denpasar is similar to other places, which are the mortality rate around 20-29.5%. This fact shows big issue that should be solved (Agbor et al. 2014; CDC 2010). The characteristic of HIV-TB patient in Denpasar is most male and on younger age (<45 years old), this also a problem because show the lost of potential or productive human resource (Fiebig et al. 2012; Tabarsi et al. 2008). Most of HIV-TB patient that found in Denpasar were pulmonary TB this fact is similar to other study regarding mortality of HIV-TB patients and show the sample of this study is representative (Mabunda et al. 2014; Tabarsi et al. 2008).

The risk of death of HIV-TB patients who are identified and treated in a hospital 2.795 compare to PHC shows that HIV-TB patients who are identified and treated in hospital are late diagnosis. Most of them came to the hospital at advance stage. This result shows the important of early detection and prompt treatment at earlier stage. All high-risk population should be screen and continuous to diagnosis procedure if the screening result positive. Unluckily most of HIV-TB patients in Denpasar came to Hospital.

The risk of death of HIV-Pulmonary TB 2.143 (2.1) times compared to extra pulmonary. This result indicates the progressive impact of the co-infection and the important of prompt treatment especially HIV patients with pulmonary TB infection. All HIV patients should screen TB whit or without any symptom. HIV patients without symptom may followed Chest X-ray to identified any abnormality suggestive TB. HIV patients who infected TB should receive Anti TB drugs as soon as possible to increase their condition and prepare for ARV therapy. Many study in worldwide shows that early detection and prompt treatment of TB at HIV patients cause better prognosis.

The risk of death of New HIV-TB patients 0.584 times (protective) compare to others (history lost to follow-up, failure, chronic and relapse). This result have same findings with study in Recife, Pernambuco State, Brazil that found previous treatment dropout was the risk factor of HIV-TB patients death with RR=2.0; 95% CI:1.5-2.7 (Domingos et al. 2008). This evidence shows the important of continuous treatment monitoring of TB patients to ensure regularity, preventing lost to follow-up, relapse, and treatment failure and chronic. HIV-TB patient should assist by a competence drug observer to support, motivate, provide enough information and ensure treatment adherence.

The risk of death HIV-TB patient that HIV detected earlier 0.68 times (protective) compare to TB detected after HIV. HIV infection detected earlier mean the patient is on earlier stage. This argument could be explanted by the pathophysiology of HIV-TB co-infection. HIV patients have decreased immunity and then infected with TB opportunistic. This evidence also shows the importance of early detection. This result implicates the important of adequate counselling and continues to HIV testing as soon as possible to those with risk factors.

The limitations of the study are the using of secondary data that caused limited variable could be analysed. There are more factors not yet considered particularly variables during treatment such as adherence, side effect and mid evaluation results. The other limitation of secondary data is more uncompleted data and cannot be analysed. Beside the limitation, this study shows the important of further analysis of surveillance data to be information to policy maker. Since our condition in Indonesia, rich data but poor information, this study could be an example how to analyse the data that collected by surveillance system to be important information.
CONCLUSION

Since the PPs potency are high, improving their knowledge regarding ISTC through continuous training and refreshing especially on standards for diagnosis and public health responsibility is needed. A certificate that awarded to the PPs should be continuing to gain their respect and thrust to this program.

COMPETING INTERESTS

The authors declare that we have no competing interests.

AUTHORS’ CONTRIBUTIONS

IWGAEP designed the study, developed the data collection tools, conducted the interviews, data analysis and drafted the manuscript. IMS and PK contributed to designing the study, development of the methodology and collected the data. PS, NWS and MS contributed to data collection and drafting of the manuscript. All of the authors have approved the final manuscript.

ACKNOWLEDGEMENTS

The authors would like to thank Udayana University for funding this research. We sincerely thank to Health Office of Denpasar City and Bali Province for their support and provision of TB related epidemiological information.

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PREVENTING THE SPREADING OF DIPHTERIA OUTBREAK BY MASS IMMUNIZATION AT EAST JAVA, INDONESIA

Kurnia Dwi Artanti

Department of Epidemiologi, Faculty of Public Health, Airlangga University
Campus C Mulyorejo Surabaya - 60115
Email: kurnia.dwi.z@gmail.com

ABSTRACT

Increasing the case of diphtheria was always happened since 5 years ago. In October 2011 there was an outbreak of diphtheria in East Java, Indonesia. Diphtheria spread to 38 rural and urban areas with case fatality rate about 3.3 %. This study aimed to review the risk factors of outbreak of diphtheria including the age distribution, immunization status, disease severity outcomes, and preventive measures of the outbreak and how preventing the spreading of outbreak.

This is descriptive study. The population was all community in East Java Province. Case evident of diphtheria and mortality rate was obtained from the East Java Provincial Health Office. All data and information were collected by using in-depth interviews with program managers and study documentation. There are 954 diphtheria cases during 2012. The total of 458 cases (48%) was incomplete immunization status and 37% of patients were not immunized and only 15% had complete immunizations.

Operational Plan for combating the outbreak of diphtheria in East Java including the implementation of Mass Immunization so called Sub-PIN diphtheria. Mass Immunization has been given three times and Outbreak Response Immunization with the target program of age above 2 months – 15 years in 19 districts of East Java Province. The evidence of diphteria cases decrease become 250 cases (26%) in 2015. Outbreaks that occurred in East Java may be caused the low level of immunization status. Sub-PIN intervention and Outbreak Response Immunization was expected to improve the immune status against diphtheria.

Keywords: Diphtheria, Outbreak, East Java, Mass Immunization

INTRODUCTION

Diphtheria still remains a serious health problem in Indonesia, especially in East Java. The tendency of diphtheria cases in East Java always increase every year. The incidence of diphtheria during the period 2010 until 2011 is 304 cases with 21 deaths to 665 cases with 20 deaths. Meanwhile, the results are also shown in the spread of diphtheria cases in East Java, which tends to expand every year. During year 2011, there are many diphtheria cases in all areas in 38 districts or cities in East Java with CFR of 3.3% (East Java Health Office, 2012).

Diphtheria is an acute bacterial disease caused by Corynebacterium diphtheriae. The disease attacks the tonsils, pharynx, larynx, nose, and rarely mucous membranes or skin and conjunctiva or vagina. Diphtheria is characterized by a lesion of greyish asymmetric membrane with surrounding inflammation. The lesions caused by a specific cytotoxin released by bacteria (Widoyono, 2011).

The transmission of diphtheria is through droplet, hence everyone can be infected easily. The spread of diphtheria
tends to expand every year. East Java had outbreak of diphtheria on October 10th, 2011. Various efforts to control the cases of diphtheria base on guidelines for case management of diphtheria according to Standard Operating Procedures (SOP), therapeutic of Anti Diphtheria Serum (ADS) in patients, administration of ORI, handling contact with prophylaxis, strengthening surveillance to early detection of cases of diphtheria in health centers and hospitals, as well as the implementation of additional immunization (Sub PIN diphtheria) simultaneously in several prioritized districts or cities (East Java Health Office, 2012).

Immunization Sub PIN is an effort to eliminate and handling of an outbreak of the disease that can be prevented by immunization (PD3I) or vaccine preventable diseases. Sub PIN Immunization activity was conducted based on problem solving that founded during monitoring activity or evaluation of the epidemiological situation of the disease. Vaccine preventable diseases are disease that is expected to break the transmission chain of the disease (East Java Health Office, 2012b).

This study aimed to review an outbreak of diphtheria in some previous years, including the age distribution, immunization status, disease severity outcomes, and preventive measures of the outbreak.

**MATERIAL & METHOD**

This is a descriptive observational study conducted in East Java Province during the time of outbreaks was stated. The data collected in this study including primary and secondary data. The primary data was obtained by using in-depth interview with the program officers in the East Java Provincial Health Office. The instruments used are in-depth interview guide and questionnaire using several open questions. The secondary data was obtained by using documentation study. Documents used are regularly submitted reports from District or City Health Office to Provincial Health Office.

The observed variables were socio economic characteristics of respondents including age, duration of treatment or care, Case Fatality Rate (CFR) of diphtheria and Immunization Status. Data was descriptively analyzed and statisticaly analyzed using correlation test. The descriptive analysis on any variables such as characteristics of respondents (age, sex, education, occupation). Bivariate analysis was done to know the relationship between status of immunization and the condition of the patient (Improved or died).

**RESULT & DISCUSSION**

Diphtheria is one of vaccine preventable diseases was categorized as a reemerging infectious disease. Diphtheria remains a serious health problem in Indonesia, especially in East Java. The distribution of diphtheria cases in East Java during the past 10 years was depicted in Figure 1.

![Figure 1. Distribution of diphtheria cases in East Java year 2000 - 2012](source: Health Office of East Java Province 2013)

The incidence of diphtheria tends to increase from 2004, and increase higher until 2009 when number of cases of diphtheria were 140 cases with 8 deaths.
(CFR 5.71%). In year 2010, the number of diphtheria cases were 304 with number of deaths were 21 (CFR 6.9%). In year 2011 the number diphtheria cases were 665 with 20 deaths (CFR 3%). In 2012, the diphtheria cases were 954 with 37 deaths (CFR 3.8%).

The main characteristic of diphtheria is an exotoxin has produced and could not be treated with medication. Therefore, administration of diphtheria antitoxin is essential to resolve the cases of diphtheria (Long, 2000).

It will become complications if admission of diphtheria antitoxin came late. Complications frequently causes of death is myocarditis (Wharton, 2004). It was often occurs in severe diphtheria. The severity of disease is based on the extent of pseudomembranous and neck edema (bullneck) (Vitek et al., 2000). Admission of antitoxin was recommended in accordance with empirical dose based on the level of toxicity, the location and size of the membrane is formed, and the duration of the disease. Similar dose must be given to both children and adults (Long, 2000). Anti-toxin was preferred to be administered by intra venous.

Diphtheria associated with high mortality and the prognosis is one of the factors that speed the provision of antitoxin. When the treatment was given on the first day after the diagnosis, the mortality rate will be 1%, but if the treatment was given too late on the fourth day, the mortality rate reaches about 20% (Wharton, 2004). The high rate of mortality (33.3%) on the possibility of an outbreak in Nigeria due to lack of antitoxin (Sadoh & Sadoh, 2011). It was similar with outbreak in India, in which the Case Fatality Rate (CFR) reached 30.8%. It was caused by during an outbreak of diphtheria none of the patients received antitoxin (Lahari et al., 2010).

The high mortality due to the late diagnosis caused by the patients came late to health provider. The delay affects the organism to perform multiplication and spread the toxin before admission antibiotics (Pantukosit et al., 2008). The mechanism of antimicrobial therapy is to stop production of diphtheria toxin, to treat local infection and prevent the transmission of the organism to contact (Long, 2000). Toxin that has been formed can not be relieved by medication. According to the study in Thailand, early case detection and prompt treatment reported to decrease complications and mortality (Pantukosit et al., 2008).

The Distribution of Cases based on Place

The incidence of diphtheria has spread in all cities or district of the Province of East Java. Most regions with a diphtheria incidence was Situbondo as many as 129 people, Jombang as many as 95 people, as many as 77 people in Surabaya, Bangkalan Jember as many as 69 people and as many as 58 people. Some areas there were death caused by diphtheria. Deaths caused diphteriae most widely obtained in Jombang (11 people), Situbondo (7 people), Bangkalan (4 people) and several other areas was depicted at Figure 2. Distribution of cases of diphtheria in eastern Java, especially in a region known as the "tapal kuda " (Coastal Area).

The spread of diphtheria cases are widespread. It can be influenced by the activity of diphtheria carrier. The condition is aggravated by carriers contact which can not to be identified. Meanwhile the mobility of community in East Java is very high, due to the increasing of regional economical development and progress and industrial development. As we knew that contact with a patient or a carrier is one of the main key for diphtheria disease transmission, because transmission occurs through droplets when an infected person or carrier coughs, sneezing, and talking (Mandal et al, 2006). The spread of diphtheria cases in East Java with the positive of toxigenic mythic based laboratory results were also widespread. The Increase in Distribution
is a "warning" for the local government to give efforts to eliminate diphtheria transmission chain more priority.

The Distribution of Cases based on Age

The pattern of diphtheria patients according to age group has changed over a period of last 5 years. Figure 2 shows, from 2008 to 2012 cases of diphtheria for the age group > 15 years have continued to rise up from the reported cases as many as 954 cases, 35% (334 cases) is a diphtheria patient age group >15 years. This shows that the immunity of aged >15 years has decreased compared to the previous age. While in infants group had decreasing number of cases from 2007 to less than 2% in year 2012. It can be assumed that the baby who getting the DPT vaccine before one year, his immunity aquired from administration of the vaccine, can protect them against the spread of diphtheria. Unlike the toddler group, the booster should be given at age 18 months. But many children who do not get the booster vaccine, they may vulnerable from infected the diphtheria.

The distinguish of individual characteristics can indirectly affect the reaction to exposure to a disease. The disease pattern of diphtheria was distinguished by age group and immunization status of a person. According to Noor (2008), age is major characteristic of individual who susceptible of disease because of age have a relationship with the magnitude of the risk of an illness and resistance in certain age groups (Noor, 2008).

Overview of the distribution of diphtheria cases by age group has moved significantly over a period of last 5 years. According to Wahab and Madarina (2002), the type of vaccine that can protect against infections such as diphtheria, will reduce transmission of infectious agents in community and reduce the chances of a vulnerable to exposure to these agents. Children who have not been immunized will grow up without exposure to the infectious agent. This can shift the average age of the incidence of infection become getting older (Wahab S and Mada, 2002). Diphtheria occurs primarily in the periods when the temperature is cooler in the subtropical countries and it mainly affects children under the age of 15 years who have not been immunized yet. In some case it can also occur in adolescents who had never immunized (Chin, 2000).

Another study by Malegoan and Dhole in Maharashtra showed that 88.1% of diphtheria cases occurred in those aged >5 years (Dravid & Joshi, 2008). A retrospective study conducted by Assam revealed that 59% of diphtheria cases occurs at the age of 5 years (Nandi et al, 2003). While the study of the outbreak in India indicates that the change of the epidemiology of diphtheria and lack of protective antibodies against diphtheria in
adults, so that immunization was necessary for long term effect in adults to prevent the emergence of diphtheria (Lahari et al., 2010).

Figure 3 shows that in patients with diphtheria immunization status in year 2012, showed that out of 954 cases, a total of 458 cases (48%) dominated by people with incomplete immunization status. Meanwhile, diphtheria patients with incomplete immunization status only by 15%. The study conducted by Nurbani and Siti (2010) states that incomplete of DPT immunization status, can be at risk for infection diphtheria 4.29 times greater than children who is completeley immunized. It shows that the immunization status has an important role in the incidence of diphtheria (Nurbani and Siti, 2010).

The Distribution of Cases based on Immunization State

The status of diphtheria outbreak in East Java in October 10, 2011, it has been declared. The response to outbreaks of diphtheria obtained a special attention by the local government. Various attempts have been carried out, including socialization of that event to all the health services, early case detection, treatment of patients according to the standard, prophylaxis to close contacts of patients, giving Outbreak Response Immunization (ORI) in the outbreak area. But even so, cases of diphtheria in East Java showed an increasing trend.

As a short-term strategy in order to overcome of diphtheria outbreak in East Java, base on the recommendation of the Advisory Committee of Experts of the National Immunization is supplemental immunization activities (Sub PIN) on diphtheria. It was an effort to increase durability and protect the community against diphtheria, which is expected to break the chain of diphtheria transmission. The implementation of Sub PIN is 19 district or city priorities. The district and cities that prioritized has been found positive bacterial toxigenic such as Sidoarjo, Bojonegoro, Probolinggo, Surabaya, Sumenep.

The implementation of Sub PIN as the target is on the 3 age groups ie 2-36 months,> 3-7 years, and >7-15 years. Selection of the three target groups based on the age distribution of diphtheria cases showed that patients dominated by the children age <15 years. Based on immunization coverage per county or city, the three age groups were already had good standards compliant ≥95%. The maximum result shoulde be 100% by target-based data collection.

After the implementation of the SUB PIN and ORI undertaken by the government in which being held 3 times, it getting a declining of the incidence of
diphtheria. In 2012 as many as 954 cases decrease to 610 cases in 2013, then decrease further to the year 2015 as many as 260 cases (figure 4).

CONCLUSION

The diphtheria outbreaks that occurred in East Java might be caused by low coverage of immunization. Sub-PIN Intervention and Outbreak Response Immunization is expected to improve the immune status against diphtheria.

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EVALUATION OF PULMONARY TUBERCULOSIS SURVEILLANCE SYSTEM ATTRIBUTES IN LAMONGAN DISTRICT 2016

Melyana1, Sigunawan2, A. C. Hidajah3

1 Field Epidemiology Master Program Airlangga University
2 Lamongan District Health Office
3 Department of Epidemiology Faculty of Public Health Airlangga University

Email: 1melyana-2015@fkm.unair.ac.id, 2sigunawan20@yahoo.com, 3atik-c-h@fkm.unair.ac.id

ABSTRACT

One of the target diseases of epidemiological surveillance in Indonesia is Pulmonary Tuberculosis (TB). Based on the analysis of health problems that have been conducted in Lamongan District Health Office, Pulmonary TB is one of the top three priorities disease that needs preventive efforts.

This study was conducted in Lamongan District on May-July 2016. The primary data were collected from interviews and document study with the pulmonary TB officers in health centers in Lamongan. Secondary data such as pulmonary TB surveillance report were collected in Lamongan District Health Office. From a total of 33 public health centers (PHCs) in the working area of Lamongan District Health Office, 12 PHC were selected as sample by purposive sampling.

Half of pulmonary TB program officers in 12 health centers that were selected as sample has the highest education level as bachelor, 8 (66.7%) of them have been served for more than 5 years. However, only 7 (58.3%) of pulmonary TB program officers has attended training on pulmonary TB. There were 4 (33.3%) of pulmonary TB program officers said that the surveillance was hard to conduct and 6 (50.0%) of pulmonary TB program officers who did not have computer skills. Pulmonary TB surveillance was still done passively and there were delays in the reports collection. The evaluation of pulmonary TB surveillance system attribute in Lamongan reveals that there are problems on: simplicity, flexibility, sensitivity, timeliness, and stability.

Keywords: Attributes, Evaluation, Surveillance, Pulmonary Tuberculosis

INTRODUCTION

Based on Health Minister of Republic Indonesia Decree Number 1116/Menkes/ SK/VIII/2003, one of the target diseases of epidemiological surveillance Indonesia is Pulmonary TB. Pulmonary TB is a contagious infectious disease caused by Mycobacterium tuberculosis, which can attack various organs, especially lungs. Since 1993, the World Health Organization (WHO) states that pulmonary tuberculosis is a global emergency for humanity. Until now, pulmonary TB is still a problem that gives a considerable burden on society. It is associated with variety of new challenges faced in controlling pulmonary TB such as pulmonary TB and HIV co-infection, drug-resistant pulmonary TB and other challenges with the higher level of complexity (Ministry of Health Republik Indonesia, 2011).

In 2014, WHO recorded 9.6 million people suffered from pulmonary TB and 1.5 million died. It is estimated 1 million
children suffer from pulmonary TB and 140,000 children die. Globally, there are approximately 480,000 people who experience anti-resistant against pulmonary TB drugs (OAT). India, Indonesia, and China are the three countries with the highest number of pulmonary TB cases (WHO, 2015).

Pulmonary TB control in Indonesia has been conducting since the Dutch colonial era, but it is still limited to a particular group. After the independence, pulmonary TB control has been carried out by the Center for Lung Disease Treatment (BP4). Since 1969, Pulmonary TB control conducted nationwide through health centers and in 1995, the strategy of Directly Observed Treatment, Short course chemotherapy (DOTS) was applied in pulmonary TB control programs in health centres gradually. In 2000, the DOTS strategy implemented nationally throughout health service facilities especially health centers that are integrated into primary health care. During 2011-2014, Pulmonary TB case detection rate in Indonesia that measured by Case Notification Rate (CNR) was stagnant, but in the same time period, the case finding drug-resistant pulmonary tuberculosis increased (MoH RI, 2015).

Based on health problems analysis that had been done in Lamongan District Health Office, Pulmonary TB was one of the top of three priorities disease that needs preventive efforts. The focus of the problem was the increasing number of drug resistant pulmonary TB cases in Lamongan district. It was necessary to evaluate the pulmonary TB surveillance system which has been implemented in Lamongan district.

**MATERIAL & METHOD**

This research is a descriptive evaluation of the pulmonary TB surveillance system attributes. The research was conducted in Lamongan through May-July 2016. Data collected in the form of secondary data and primary data. Secondary data was TB surveillance report in Lamongan District Health Office, while the primary data was in the form of interviews and study the document to the officer holder pulmonary TB programs in PHC and deputy supervisor Pulmonary TB control program in Lamongan District Health Office.

As mentioned in Lamongan district health profile, Lamongan divided into 3 areas:

1) South Central, consisting of districts: Kedungpring, Babat, Sugio, Sukodadi, Pucuk, Sarirejo Kembangbahu, Tikung, and Lamongan.
2) North Central, consisting of districts: Sekaran, Maduran, Laren, Karanggeneng, Kalitengah, Turi, Karangbinangun, Glagah, and Deket.
3) North-South, consisting of districts: Mantup, Sambeng, Ngimbang, Bluluk, Sukorame, Modo, Brondong, Paciran, and Sulokuro.

From a total of 33 primary health centres (PHCs) in the working area of Lamongan District Health Office, 12 PHCs was chosen as sample by purposive sampling. From each region four PHCs were selected with selection criteria based on success rate below 100,0% as it revealed in Lamongan District Health Profile 2014. The selected PHCs were Moropelang (Babat subdistrict), Lamongan, Sukodadi, and Pucuk PHC for the South Central region; Sekaran, Turi, Glagah, and Deket PHC for the North Central region; Mantup, Ngimbang, Bluluk, and Modo PHC for the South-North. All the PHCs chosen as sample already have a laboratory for sputum examination for the patients.

**RESULT**

Overview of pulmonary TB Program Officer and Implementation of Pulmonary TB Surveillance in Lamongan
Pulmonary TB surveillance carried out by referring to the Ministry of Health Decree number 364/2009 regarding Guidelines for Tuberculosis Prevention and National Handbook of Tuberculosis Control from the Directorate General of Disease Control and Environmental Health, Ministry of Health Republic Indonesia. Sources of funds for Pulmonary TB surveillance activities derived from Health Operational Support from Ministry of Health Republic Indonesia. Since 2014, Integrated Information Systems Tuberculosis which is known as SITT has been implemented for Pulmonary TB surveillance in Lamongan district.

Based on the results of interviews with 12 pulmonary TB program officers in 12 PHCs located in the districts of Lamongan, obtained a description as follows:

In Figure 1, we can see that the ratio of men and women among pulmonary TB program officers in 12 PHCs in the research samples, was 1:1.

In Figure 2 showed that 50% of the 12 pulmonary TB programs officers in 12 PHCs in the research samples had education level as bachelor. Figure 2 also showed that there were pulmonary TB program officers who still have education level of high school, as many as 2 people (16.7%).

In Figure 3 it can be seen that the majority (66.7%) of the pulmonary TB program officers in 12 PHCs had served as the pulmonary TB program officers for more than 5 years. The shortest period was six months. Meanwhile, the longest was 30 years, which was the pulmonary TB program officer in Sukodadi PHC.

Based on the interview, all pulmonary TB program officers at PHCs have other duties besides pulmonary TB program (multiple workloads). Only 7 (58.3%) of 12 pulmonary TB program officers who had attended training on pulmonary TB.

In Figure 4 it can be seen that the reporting lines that is currently running has complex hierarchy that reduces its simplicity of pulmonary TB surveillance system. In addition, there are issues of cooperation between hospitals and private health centres. Based on the interview, the majority of pulmonary TB program officer holders cited difficulty convincing patients who had been diagnosed with pulmonary tuberculosis in hospital for sputum examination (smear).
Evaluation of Pulmonary TB Surveillance System Attributes

1) Simplicity

Based on the interview, 66.7% of pulmonary TB program officers in 12 PHCs selected as sample stated that the surveillance system that currently running was simple. However, there were still 33.3% of TB program officers in PHCs stating that TB surveillance system currently running was complex. In addition, the reporting lines that currently running was still gradual. Based on that, the implementation of pulmonary TB surveillance system that runs currently considered as complex (not simple).

2) Flexibility

In 2014, pulmonary TB surveillance in Lamongan changed from manual system to computerized system which known as SITT. This change requires training for pulmonary TB program officers to be able to use SITT. In addition, the device also needed a computer to run the software. Another change that occurs in pulmonary TB surveillance was the addition of the need for incorporate co-infection of pulmonary TB and HIV data, and also the changes upon diagnosis and follow-up of pulmonary TB patients. Based on this, Pulmonary TB surveillance system considered to be inflexible.

3) Acceptability

Based on interviews with pulmonary TB programs officers in 12 PHCs in Lamongan, obtained the information that there is no denial to conduct pulmonary TB surveillance from various stakeholders. Currently, the hospital has also implemented the DOTS strategy and reporting to the District Health Office. Based on this information, Pulmonary TB surveillance system considered has a high acceptability.
4) Sensitivity
Although the currently running surveillance system can portrays the problems of Pulmonary TB, but it was not able to monitor changes of the cases number over time rapidly to give an early alert. Based on interviews, it is known that the surveillance system that currently running tend to be passive, so that the surveillance system could not function optimally. Based on this, Pulmonary TB surveillance system is considered has low sensitivity.

5) Representativeness
The data collected by the pulmonary TB program officer will be entry to the SITT offline and sent via e-mail or brought directly to the supervisor every quarter of the year. Before supervisor reporting to the Provincial Health Office, the data will be validated so that the data collected by each pulmonary TB program officers in each PHCs reported correctly. Through the validation process, the data generated will be equally good at PHCs and at the District Health Office, so that the data are representative.

6) Timeliness
The timeliness of gathering reports from the PHCs to the District Health Office has not been calculated, and there were no attendance check so it could not be assessed. However, based on interviews with pulmonary TB program officer in the PHCs, there are 4 respondents (33.3%) who claimed there were cases of delays in reporting the data even though it is not often. Based on these, pulmonary TB surveillance system was considered not good in timeliness.

7) Stability
Although the majority of respondents expressed no interference to SITT, but there are 3 respondents who stated that they had experienced difficulties to re-entry of data on offline SITT. Even one of the respondents claimed that he experienced data loss while doing entry data in SITT offline. Based on this, Pulmonary TB surveillance system was considered unstable.

8) Data Quality
Because it has been through the validation process, the data gathered through pulmonary TB surveillance system has good quality. Especially because the data has been stored in SITT, the data can be searched and displayed instantly.

DISCUSSION
In conducting the pulmonary TB surveillance, there were 13 forms that serve as an instrument for TB data collection, as follows:
1. TB-01 was TB patient treatment card filled out by TB officers.
2. TB-02 was the patient's identity card.
3. TB-03 was district TB registers.
4. TB-04 was a TB laboratory registers were filled out by the laboratory staff.
5. TB-05 was the application form for the TB laboratory sputum examination that filled by Polyclinics officers and then answered by the laboratory staff with the laboratory results.
6. TB-06 was list of suspects or suspected to be examined sputum and filled by officers in the clinics to capture suspected TB.
7. TB-07 was a quarterly report the discovery and treatment of TB patients.
8. TB-08 was the result of the quarterly report on TB treatment.
9. TB-09 was a referral form/move patients and filled by officers of TB.
10. TB-10 was the result of the final form of treatment of a TB patient referral/transfer.
11. TB-11 was a quarterly report the results of sputum conversion the final intensive phase.
12. TB-12 was a check form preparations to cross check and cross-count analysis of test results.
13. TB-13 contained a report OAT.

Some of the forms used for reporting and recording in the PHCs, hospitals, BP4, Clinics and Medical Practitioners Private, include TB-06, TB-05, TB-01, TB-02, TB-03, TB-09, TB-10 and TB-04. Special for Private Medical Practitioners, the use of TB recording and reporting forms customized for the required surveillance information available. Mean-while, the form used by the District / City Health Office in recording and reporting TB include TB-03, TB-07, TB-08, TB-11, TB-12, TB-13 (MoH RI, 2009).

Although all forms of TB are on the table, PHCs officers other than TB officers were not involved actively to record and report, so many forms are not filled completely. The completed form was limited to TB-01 which was near-perfection (Nizar, 2010). Some thing similar was found in the evaluation of pulmonary TB surveillance system in Lamongan on the 12 PHCs as sample. When interviewed officers admitted that it quite difficult because of the large number of forms that must be filled, in addition to the color of TB-02 form also pose difficulties for readings.

Trace back at Figure 2 and Figure 3, it can be seen that some of pulmonary TB programs officers in PHCs still have the latest education on high school level and more than most (66.7%) officer have been served as Pulmonary TB program officers for ≥ 5 years. On this evaluation progress, researchers found five officers who are less skilled in using computers so as to fill SITT need the help of others. Some of them assisted by colleagues in PHCs who have computer skills, but there were also some who were relying on friends from outside the PHCs and also their own children to fill SITT offline that will be sent via e-mail to the District Health Office every three months. In addition, there was still one PHC that does not have a device (laptop/computer) specifically for running the application SITT so the officers used his personal devices.

The addition of the information required in surveillance of pulmonary TB such as pulmonary TB and HIV co-infection increased the workload of pulmonary TB program officer as attachment of a negative stigma about HIV in Lamongan society is still high.

Other problem in implementation of pulmonary TB surveillance in Lamongan was related to the funding needs. Funds used for active surveillance in the discovery of suspected pulmonary TB is limited from funds from the Ministry of Health which was aimed at preventive activities health problems (East Java Communications Office, 2010). However, because these funds are not specifically aimed at overcoming the problem of pulmonary TB, lack of funds was mainly due to reach remote areas needed extra time and energy. Meanwhile, of the holders of pulmonary TB program also experienced problems for the implementation of active surveillance because of the multiple workloads. Limitation of time was the main constraint.

CONCLUSION

1. Of the 12 PHCs were selected as sample, 50% of pulmonary TB program officer has the highest education level S1.
2. Of the 12 PHCs in the research samples, 8 (66.7%) of pulmonary TB program officer had served as the pulmonary TB program officers for ≥ 5 years. However, only 7 people (58.3%) of pulmonary TB program holders who had attended training on pulmonary TB.
3. Evaluation of pulmonary TB surveillance system in Lamongan found problems on the attributes:
simplicity, flexibility, sensitivity, timeliness, and stability.

SUGGESTION

1) Attendance check should be made so that the timeliness can be assessed of each PHC.
2) Training for health officers, especially pulmonary TB program officers, so the forms could be filled completely.
3) Keep advocacy to local governments for special fund for Pulmonary TB surveillance, especially considering the fact that TB cases keep increasing annually in Lamongan district.
4) Coordination between hospitals and PHCs should be improved in pulmonary TB patient referral system.
5) A standard questionnaire for the evaluation of pulmonary TB surveillance system should be set so it can be used by other researchers.

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HYPNOBIRTHING (LABOR WITH HYPNOSIS) TO ACCELERATE FIRST STAGE OF LABOR

Nurlailis Saadah

Magetan Midwifery Department, Surabaya State Polytechnique of Health;
Jl. Jend.S.Parman J Magetan, East Java; HP 08125945790;
Email: nurlailis_66@yahoo.co.id

ABSTRACT

Childbirth is a process that could induce stress on mother because of her pain and it can influence the duration of first stages of labor. Hypnobirthing is a method that could influence mother subconscious on birthing process so she will be relax and the birthing process will be accelerated and reduce the pain. Meanwhile Self Hypnosis is a hypnosis method, where people hypnose themself without any support from others. The aim of this study was to analyze the time differences of first stage of labor using Hypnobirthing method, done in BPS (private clinic) by hypnobirthing trained midwives in Ngawi District, East Java Province. Mother was obtained an hypnobirthing training, therefore they could performed self hypnosis for shorter, safer and comfortable birthing process.

This research was clinical trial with randomized controlled trial study design. There were 50 samples of 3rd trimester pregnant mother that had been given hypnobirthing training and 50 others without hypnobirthing training. Independent variable were re hypnobirthing and without Hypnobirthing. Dependent variable on this study was the duration of first stages of labor, count from starting of regular contraction and its influence toward flattening and completely opening of cervic (10 cm opening). Independent sample T-Test was used to analyse the difference time of first stage of labor.

The result showed that the mean of first stage of labor duration by trained hypnobirthing pregnant mother was 271.80 minutes or 4 hours 31 minutes, while non-trained hypnobirthing mother which not was 606.50 minutes (10 hours 6 minutes). There was significant difference of duration first stage labor period between mother who perform hypnobirthing with mother without hypnobirthing (p=0.000). The duration of first stage of labor of the mother performing self hypnosis (previously trained an hypnobirthing training on 3rd trimester of her pregnant) was shorter than the pregnant mother who didnt perform self hypnosis. Self hypnosis will shorten the duration of first stage of labor 55% faster than labor without self hypnosis, it means that Self Hypnosis accelerates first stage of labor.

Keywords: Self Hypnosis, Duration Differences, Hypnobirthing

INTRODUCTION

First stage of birthing start from the regular contractions of uterly followed by dilatation and effacement of cervix until it opening completely (10 cm). Dilated and effaced cervix are creating a birthing sign, and bloody show. Uterus contraction also make a change on cervix by adequate contraction frequency about 2 times in 10 minutes menit (Varneys, 1997; JNP-KR, 2008).

On Psychological aspect, birthing is a sequence of event with stress sensation. Mother anxiety and stress during birthing cause increasing energy consumption that potentially cause fatigue. Toward the birthing process, mother usually haunted
with restlessness as one of the indicator of anxiety on mother. Birthing with conventional method still commonly performs by prim gravid or multigravid mother so that they will get anxious or scared before labor. Mother anxiety will influence the pain sensation so that birthing process on first stage of labor become longer.

Hypnobirthing will shorten the initiating phase of labor. According to Jenkins & Pitchrad on Batbual (2010), the period of first stage of labor in active phase is 2.9 hours on primigravida and 0.9 on multigravida mother. Where as Abraham and Heron (2001) on Batbual (2010) showed that period of first stage of labor on active phase was 3.23 hours. Previous study by Davidson (1962) on Batbual (2010) revealed there were decrease of first stage of labor period significantly on primigravida and multigravida mother with the result of study showed that 70 hypnotized patience, their first stage of labor was 6 hours 21 minutes, in contrast 70 patient that only order to be relaxed during the labor, their first stage labor period was 9 hours 28 minutes, and 70 other controlled patients, their first labor period was 9 hours 45 minutes.

The number of Labor in Ngawi District, East Java Province is 13,152 cases in a year. The number of birthing facilities is 24 Primary health care (Puskesmas) and 100 BPS (Private Practice Midwife), and 2 Public Hospital. The average number of labor in primary health care are 563 Labor cases in a year. From 100 (BPS) Private Practice Midwife there were only 3 people that get a training and certified on hypnotherapy.

According to preliminary study conducted in Ngawi District on six BPS taken randomly, showed that there were 25 labors in average every month. From the interview result in 23 mother, taken randomly in March 2011 to assess her labor process, show that all of the respondents (100%) felt pain sensation during labor and their labor took a longer time.

There were also some previous study about effect of hypnosis given to mother during labor by trained midwives, however there are no study yet about effect of given hypnobirthing training for pregnant mother by hyponetherapist (certified trainer) in order the mother will perform self-hypnosis during labor yet.

Hypnotherapy is one of the psychological modulation alternate method beside relaxation, guide imagery and psychoptophylaxis method. This method is come from hypnosis science. This method can be conducted to every people for multipurpose, including performed to primigravida or multigravida, several months before labor.

Hypnobirthing is a method performed by trained midwives that only performed the hypnotherapy method to patient only before the labor. By using the self-hypnosis method in hypnobirthing, it possible that, a woman can prepare their body to get on a very relax position where their body muscle, work as they want to be during the labor process. By using this therapy, mother will learn on how they can understand and release the fear-tension-pain syndrome that commonly cause the pain and discomfort sensation during the labor process (Mongan, 2007).

Primigravida and Multigravida mother can be trained by a trainer, several months (commonly three months) before labor. This training can be deliver by certified-trained on hypnobirthing. The aim of this intervention was mother can perform self hypnosis during their labor so that it possible to decrease pain sensation and accelerate first stage of labor.

The research question is “Does the hypnobirthing method do by mother them self (self hypnosis) will accelerate the time of first stage of labor?” The aimed of this study is to analyze differences time of first stage labor between mothers who perform self hypnosis and mother without self hypnosis.
MATERIAL & METHOD

This study was a clinical trial with randomize controlled trial study design. The post test only control group design, to see the comparison of time average of first stage of labor by hypnobirthing and without hypnobirthing. Subject allocation into each group was done by random allocation thus one group give a treatment and another not get a treatment by still directly observed/ measured.

Target population in this study were all of pregnant mothers and labor mothers in Ngawi district, East Java Province. Reached population in this study were all of pregnant mother and mother who labor with BPS (private midwivery) assistance in the working area of Health Service Department of Ngawi District during period June until August 2011.

The basis used to estimate the expected sample size is very dependent on the purpose of study and design chosen (Lemeshow, 1997). This study assess comparison about the long time between using hypnobirthing method and without hypnobirthing. The sample size in this research are 50 respondents. Technique used to get samples in this study was proportional simple random sampling.

From pregnant mother who checked her pregnancy and plan to have a labor on the BPS (Private midwives), that the BPS (3 BPS) will be location of study, we get randomly about 100 mothers then divided into two groups, that was group of pregnant mothers who get a hypnobirthing training and group of mothers without hypnobirthing training. The number of pregnant mother as a sample taken from BPS proportionally, it took from mothers who plan to have a labor on the BPS.

Variable of this study consist of: independent variable were hypnobirthing and without hypnobirthing. Dependent variable was the time of first stage of labor. Instrument of this study: instrument to deepen suggestion exercise (hypnosis) using Hypnotherapy cassette/music.

Instrument to measure first stage labor time using time measurement gadget (watch). This analysis aimed to figure out each variable characteristic in this study. Characteristic of study with continuing scale were performed as figure the parameter from the mean, standard of deviation and minimum and maximal score in the first stage of labor. The result of univariat analysis showed in table and interpreted in narration. Independent t-test is used to know comparison of time average of first stage labor in a dependent variable between each group with hypnobirthing and without hypnobirthing.

RESULT

In this study, we used 100 respondents divided into two groups, treatment group (pregnant mother who get hypnobirthing training start from 3rd semester, 50 person), and control group, 50 mother labor without hypnobirthing or without training of hypnobirthing.

From all of mother, almost all (87%) in age of 21-34 years old, while 11% of less or same with 20 years old, and 2 mothers in age interval more or same than thirtyfive years.

Duration of First Stage Labor

Duration of first stage labor even in labor mother who performed hypnobirthing or without hypnobirthing count start from beginning from the regular contraction and influence toward effacement and complete opening of cervix (10 cm). Counting result of first stage labor duration on this study show average time of first stage of labor on mother who do hypnobirthing was 271.80 minutes or 4 hours 31 minutes. Meanwhile, time average of duration of first stage of labor was 606.50 minutes or 10 hours 6 minutes.

From result analysis to know difference of average time of first stage labor on primigravida mother who
performed hypnobirthing was 274.4 minutes or 4 hours 34 minutes. Meanwhile, average time of first stage labor on primigravida mother without hypnobirthing was 629.7 minutes or 10 hours 29 minutes.

Average time of first stage labor on multigravida mother who performed hypnobirthing was 273.2 minutes or 4 hours 33 minutes. While, multigravida mother without hypnobirthing was 566.18 minutes or 9 hours 26 minutes. The study showed that, primigravida and multigravida mother with or without hypnobirthing had similar average time of 4 hours 33 minutes. Meanwhile difference between average time of primigravida and multigravida without hypnobirthing was 1 hours 3 minutes, faster than multigravida mother without hypnobirthing. By using t test independent sample to analyze difference of period of first stage of labor with or without hypnobirthing obtained probability value (p=0.000), mean that was difference of period of first stage of labor with and without hypnobirthing.

**DISCUSSION**

The result showed that there was difference between time of first stage labor of mother who perform self hypnosis and mother without self hypnosis, it means self hypnosis can accelerate first stage labor. Result of this study is consistent to the previous study that stated that hypnobirthing is a process to develop people to a create suggestion on his subconscious mind, in order to support his subconscious mind to control mother decision consciously and enjoy the process during labor.

Hoffman & Kippenhauer (1969) stated that hypnosis can reduce fear, stress, and pain sensation before and after labor. During hypnosis process hypnosis mother will feel more deep physical relaxation, very focused attention, increasing sense ability and also controlling reflect and physical activity. Relaxing condition on mother will stimulate serotonin and endorphin hormone as natural anaesthestic agent to substitute catecholamine so that utery contraction will be more adequate and labor period become faster.

This condition is linier with previous study that revealed that hypnobirthing could minimalize even eradicate fear, stress, sickness syndrome, and panic during labor so that there would not be mentally trauma during labor.

This study can prove that one of the benefit of self-hypnosis is to accelerate first stage of labor, so it suggested for midwives to improve their health service by giving a training for the 3rd trimester pregnant mother, we hope when mother undergo labor process, they can do self-hypnosis.

**CONCLUSION**

1) Duration of first stage of labor on mother without Hypnobirthing; shortest time is 400 minutes (6 hours 50 minutes); longest time is 800 minutes (13 hours 20 minutes); labor average is 606.50 minutes (10 hours 6 minutes).

2) Duration of first stage of labor on mother performed Hypnobirthing; shortest time is 30 minutes; longest time is 410 minutes (6 hours 50 minutes); labor average is 271.80 minute (4 hours 31 minutes).

3) Duration of first stage labor between mother performed hypnobirthing and mother without hypnobirthing is significantly different.

**REFERENCES**


ABSTRACT

Plague is listed in the International Health Regulations (IHR 2005) as a disease that may cause outbreaks and has bioterrorism potential. In East Java, plague cases have occurred in the district of Pasuruan with the last appearance in 2007 which lead to one (1) casualty. In order to carry out the early warning system (EWARS) of the plague, the Regional Office of Environmental Health and Disease Control (BBTKLPP) Surabaya routinely conducts laboratory-based surveillances of the plague. A longitudinal observational study was carried out, which is a during the year of 2015 as many as 3698 serums of rats have been collected from the observation area.

The test result of HA-HI serological tests for antibodies to *Yersinia pestis* found that 11 (0.29%) serums of rats showed positive for *Y. pestis* with titers above 1:10 (1:16). Moreover, vectors confirmation has been done to a total of 397 flea pools from caught rats and had been inoculated to the experimental mice, however the results were negative or incapable of causing death to the mice. Due to the results of the laboratory-based surveillance, it can be concluded that the plague still might have potential threat of disease spread in the neighborhood. Hence, this early awareness remains essential to continue prevention of the new case occurrence.

Keywords: Plague, Pasuruan, Surveillance, *Yersinia pestis*

INTRODUCTION

Plague is considered as one of the infectious disease subject to The International Health Regulations 2005 (WHO, 2008). Historically, a plague is able to develop a pandemic and the disease spread through human rapidly resulting of million victims. Although its incidence has decreased in past years, in some regions of the world plague has been increasing and classified as a reemerging diseases (Jones et al. 2008). It would be a mistake to overlook its threat to humanity, causing the disease’s inherent communicability, rapid spread, rapid clinical course, and high mortality; if left untreated (Stenseth et al., 2008).

Plague is a zoonotic disease caused by the bacterium *Yersinia pestis*. The plague is primarily affecting rodent, and humans play no role in the long-term survival of *Y. pestis* (Perry & Fetherston, 1997). Transmission of *Y. pestis* is accomplished by fleas. The fleas acquire *Y. pestis* from an infected rodent by sucking its blood (Gratz, 1999). Masses of *Y. pestis* will fill the lumen of the fleas’ proventriculus and obstruct the flow of blood. When feeding on a new host, the hungry blocked flea is unable to pump blood into its stomach and eventually regurgitates the bacteria into the wound.
bite (Eisen & Gage, 2012). Plague transmission from rodents to human most commonly occurs via infected fleas associated with peridomestic animals (rats, cats) or wild rodents (Carniel, 2008).

Currently, there are only three (3) area that observed had plague in Indonesia which are in Boyolali, Central Java; Sleman, Yogyakarta and Pasuruan, East Java (Ministry of Health, 2014). History recorded that the first entry of plague into Indonesia occurred in 1910 through Surabaya’s Port of Tanjung Perak. The disease was accidentally introduced by rodents and their fleas when Dutch government imported rice from the Port of Rangoon (Myanmar). The disease then extended to Central Java (Surakarta in 1915 and Yogyakarta in 1916). In year of 1916, plague entered through the Port of Tanjung Mas Semarang, 1923 through the Port of Cirebon, and in 1927 through the Port of Tegal (Williams et al., 1980). In addition to these places, the incidence of plague had been reported in Makassar and Deli, North Sumatra in 1922 but the disease disappeared suddenly and permanently. The number of victims due to the plague reported in Indonesia from 1910 to 1970 reached about 245 thousand inhabitants (Ministry of Health, 2014).

Plague surveillance activities in Pasuruan started in 1987 after the first outbreak at Surorowo hamlet, when 24 clinically patients were found and 20 of them died (CFR:83.3%). Before that, plague was unknown and the unexplained fever resulting sudden deaths were considered as a curse. In 1987, it was later discovered cumulative 61 patients with high fever for no apparent reason, cough and shortness of allegedly suspected plague. In 1993 there were 33 plague suspects with two fatalities, while in 1997 there were 13 suspects fortunately without fatality. The newest case was occurred in 2007 when there were 40 plague suspects with one victim (Ministry of Health, 2014).

Since 2012, The Regional Office of Environmental Health and Disease Control (BBTKLPP) Surabaya has been conducting laboratory-based surveillance of plague in Pasuruan. The surveillance consists of rodents and fleas surveillance, human surveillance, sero survey and vector confirmation along with observing other risk factors that have impact on plague outbreak in humans. Data obtained from surveillance activity will alert public health authorities when there are increasing risks for human plague, thus allowing prevention and control programs to be implemented before human plague cases occur (Gage, 1999). Thus, this laboratory-based surveillance aimed to provide the data of the vectors and rodent dynamics as well as the serological condition of humans/rodents and other risk factors that are importantly used as an early warning system due to the plague prevention.

MATERIAL & METHOD

Design

These surveillance activities were a series of cross-sectional with descriptive analysis.

Place and Time

![Figure 1. The Plague Observation Area in Pasuruan Regency](image)

These surveillance activities were carried out in the plague observation area in Pasuruan regency, East Java that spread across 5 regions of Puskesmas/
Community Health Centre (Nongkojajar, Sumberpitu, Pasrepan, Puspo, Tosari) in 4 districts consisting of 18 focus hamlets and 24 threatened hamlets. Surveillance of focus hamlets were made four times a year while the threatened hamlets were twice a year. An exception was made to the hamlet of Surorowo which was considered as a special focus hamlet, where surveillance was performed twice a month throughout a year. The implementation of these surveillance activities was conducted from January to December 2015.

Rodent and Flea Surveillance

Rodent and flea surveillance were conducted by catching live rats using steel live traps. Each survey was performed for 5 consecutive days using 200 traps installation per day to sum a total of 1000 traps per survey. Traps were placed in the houses, fields and forests in a proportion of 30%, 30%, and 40% respectively or 40% in houses and 60% in fields if no forests in the hamlets. Traps were checked daily to collect the trapped rats and replace the baits. The rats then were transferred to a cloth sack and transported to the laboratory.

In the laboratory, rats were stunned by cervical dislocation. Blood were collected aseptically from the animal by cardiac puncture and transferred into non-EDTA vacuum tubes. All tubes were clearly labeled and accompanied by a data sheet containing information about the date, rat species, and the location of trap. Rodent sera were obtained by centrifuging the blood at 3000 rpm for 15 minutes. The sera were stored in a freezer prior to further analysis (serology).

Rats that had their blood drawn then were placed in a white bucket with a height of 30 cm. Rats then were brushed vigorously from the tail end forward with a shoe brush. The fallen fleas in the bottom of the bucket were collected by using an aspirator. Then the fleas were pooled by species, type of host and area where collected with maximum 25 fleas per pool. During these laboratory processes, the species of the rodents, the species of fleas as well as trap success (number of rats captured per number of traps placed) and flea index (number of fleas per number of rats captured) were measured.

Human Surveillance

Human surveillances were carried out by active and passive surveillances. The active surveillance was conducted by visiting villages and houses in the area while the passive surveillance was relied on the patient’s data in Puskesmas/clinics or other health facilities. Individuals suspected to have plague were those who had lived in or recently exposed to plague-endemic areas and had clinical symptoms that were consistent with a presumptive diagnosis of plague, such as fever, bubo and lymphadenopathy in the inguinal region, axilla or neck. Several blood samples of the population in the observation area were also taken randomly as surveillance material.

Serological Testing

The passive haemagglutination test (PHA) for antibodies against Fraction I of *Y. pestis* was performed by the method used by Centers of Diseases Control, Atlanta (WHO, 2000). All sera were heated at 56 °C for 30 minutes in a water bath and absorbed with fresh, sheep red blood cells before reaction with antigen-labeled, sheep red blood cells. Briefly, sheep red blood cells collected in Alsever’s collection were washed and fixed in glutaraldehyde. The cells were exposed to tannic acid and sensitized with Fraction I antigen of *Y. pestis* (obtained from Health Laboratory Office (BLK) Yogyakarta) in a final concentration of 100 µg of antigen/ml. The PHA test was performed by microtitration technique.

All sera giving positive results in the PHA test were reabsorbed with fresh, sheep red blood cells and retested in the PHA test with a concomitant passive
haemagglutination inhibition (PHI) control. Into each well of the PHA microtitration plate was pipetted 0.025 ml of normal rabbit serum (NRS) diluted 1:100 in saline containing 100 µg antigen per ml. Using a micro diluter with a volume of 0.025 ml, test sera and control sera were delivered to both PHA and PHI wells and 11 twofold dilutions made of each serum in a row. Finally, 0.025 ml of sensitized red blood cells (5ml/liter of NRS diluted 1:250 in saline) were delivered to all wells. The plates were swirled, covered, and allowed to stand overnight at 4 °C.

The highest dilution of sera showing hemagglutination were recorded and compared with the PHI titers. Sera were considered positive only when repeated testing showed a PHA titer of ≥ 1:16 that was four times or higher than the PHI titer.

Vector Confirmation

To determine whether the fleas were infected with plague or not is by inoculating them to susceptible laboratory animals. The pools of fleas in approximately 1 ml of physiological saline (0.85%) were grinded by grinder machine. These suspensions were then inoculated subcutaneously into the mice (0.5 ml per mouse). The mice were monitored over the next 7 days, and those that died were necropsied to obtain organs (liver, spleen, lungs) for bacterial isolation.

RESULT

The plague observation area in Pasuruan is mostly located in the highlands, with an active volcano at the elevation of more than 500 meters above sea level. Vegetation covers of land in the form of vegetable fields, orchards, reserved forests, pine forests, and shrubs. Residents usually clustered together on the flat part of hills. In addition, most of the areas have high rainfall intensity and humidity ranging between 55-99%.

A total of 3721 rodents were caught in 2015 with an average of successful trap was 2.7%. There were different strains of rats that are generally obtained *Rattus rattus diardi* (66.4%), *R. exulans* (21.5%), *Hylomys suillus* (0.6%) and other rat species such as *Mus musculus* and *R. norvegicus* (2.1%) as well as the shrew; *Suncus murinus* (9.4%). The average chart of the successful trap at the observation area in 2015 can be seen in Figure 2.

A total of 34.5% of the rodents caught were found infested with fleas. There were two species of flea; *Xenopsylla cheopis* found on most rats (84%) and lesser species of *Stivalius cognatus* (16%). The average total flea index was still below safe levels. However, the average specific flea index was found above safe level on April, August, September and November. Graph of the average specific flea index (*X. cheopis*) in year 2015 can be seen in Figure 3.

Table 1. Environmental Condition of Plague Observation Area in Pasuruan

<table>
<thead>
<tr>
<th>District</th>
<th>Topography</th>
<th>Elevation (m)</th>
<th>Land Use</th>
<th>Climatology</th>
<th>Rain fall/year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Temp (°C)</td>
<td>Humidity (%)</td>
</tr>
<tr>
<td>Tutur</td>
<td>Highlands,mountain</td>
<td>600 – 1300</td>
<td>Vegetable fields, apple farms, pine</td>
<td>17 -25</td>
<td>70 -98</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>forests, forests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pasre-pan</td>
<td>Hilly lowland</td>
<td>200 – 600</td>
<td>Paddy fields, mango fields, other lowland fields</td>
<td>24-31</td>
<td>55-70</td>
</tr>
<tr>
<td>Puspo</td>
<td>Lowland, hills</td>
<td>400 – 900</td>
<td>Lowland fields</td>
<td>20-31</td>
<td>60-80</td>
</tr>
<tr>
<td>Tosari</td>
<td>Highlands,mountain</td>
<td>700 – 2000</td>
<td>Vegetable fields, pine forests, Shrub</td>
<td>15-25</td>
<td>70 – 98</td>
</tr>
</tbody>
</table>
The human surveillance in the plague observation area had been made in the period of January to December 2015. From the active and passive observations resulted that no residents in the area of observation showing symptoms of plague.

During 2015, as many as 3698 serum of rodents had been collected from the observation area and 130 of human serum were also collected. The serological tests for antibodies to *Yersinia pestis* found that 11 (0.29%) serum of rats positive for *Y. pestis* with titers above 1:10 (1:16). None of human samples were found positive serologically. A number of 397 pool fleas had been made and been inoculated into the mice, but the results were negative or not capable to cause death to the mice.

**DISCUSSION**

In most cases, plagues are not found all the year round but only on the certain times called “plague season” (Pollitzer, 1954). From the cases recorded in Pasuruan, there was a 10-year cycle of outbreak that happened in 1987, 1997 and lastly 2007. This absence of case could be a sign of a ‘silent period’ that may happen as long as 10 years or even longer, after which sudden explosions of rodent or human plague may occur like the one happened in India in 1994 (Stenseth et al., 1994).
Although the cause of this matter has not been identified but these series of outbreaks suggest taking more attention to prevent any cases than may happen in the year of 2017.

Plague observation area in Pasuruan located mostly in plateau with temperature ranging from 15 to 31°C and humidity ranging from 55 to 98%. *Yersinia pestis* is considered as mesophile with optimum temperature for propagating *Y. pestis* is between 28°C- 30°C (Perry & Fetherston, 1997). But in other countries, plague also could be found in lowlands or deserts with different landscapes, climates and altitudes. These various ecological niches determine the different types of reservoirs and flea vectors, and consequently influence the incidence of human plague. Temperature and humidity influence the dynamics of *Y. pestis* flea-borne transmission (Schotthoefer et al., 2011). For instance, William et al. (2013) found that *Oropsylla montana* fleas efficiently transmit *Y. pestis* to mice at low temperatures less than 23 °C. *Xenopsylla cheopis* fleas were reported to have higher survival rate in low temperature and high humidity (Kreppel et al., 2016; Schotthoefer et al., 2011).

From the average of trap success rate chart (Figure 2) reflected that there was no high fluctuation of rodents’ density in the observation area. Higher trap success rates were found at the beginning of the year (January-March) and also end of year (November) during the raining season. These results are consistent with some observations which found that rodents are most abundant during rainy and consequently planting seasons with cooler temperature (Enscore et al., 2002; Njuwa et al. 1989; Turner et al., 1974). Different result was obtained by Pham et al. (2009) that found high rats density during hot and dry months in Vietnam. Rodents are the primary vertebrate reservoirs of plague and nearly all human cases are associated with rodent epizootics (Gage & Konsoy, 2005). Following to that statement, there is a correlation between rodents’ density with the risk of plague. Rodents can be infected through flea bites and also probably from the environments. Ayyaduraiet et al., (2008) found that *Y. pestis* remain viable and fully virulent after 40 weeks in soil. According to this research, rodents may be able to get infected by burrowing in soils that are contaminated with the remains or excreta of infected mammals or fleas.

The species of fleas and their density per host (flea index) have epidemiological significance. The species of fleas found in the observation area were *Xenopsylla cheopis* as the dominant species and *Stivalius cognatus*. Flea *X. cheopis* is one of the most efficient vectors transmitting bacteria *Y. pestis* to humans (Eisen and Gage, 2012). In addition, flea *S. cognatus* is allegedly also contributing transmits plague in Java (Williams et al., 1980). The increase in the number of the flea index could indicate an increased risk of transmission of plague from rats to humans on a plague epizootic area (Dennis and Gage, 1999; Pham et al., 2009). Based on Figure 3, the average specific flea index was above safe level on April, August, September and November. In these months, the risk of humans to be exposed to plague were higher.

Plague surveillance by conducting serological testing is necessary because isolation of *Y. pestis* from animals and their fleas may be difficult and seasonal, even in endemic foci (Cavanaugh et al., 2008). There were 11 (0.29%) serum samples of rats were obtained positive for *Y. pestis*. Out of six (6) hamlets where the rats found serologically positive, five hamlets were the focus hamlets and the remaining was threatened hamlet. In Brazil, a case of human plague occurred in the place where the rats found serologically positive (Almeida et al., 1981). This suggests that the rodent serology could aid as early warning system by predicting in which areas plague may occur. In addition,
identification of seropositive of other non-rodents species such as dogs and cats were suggested as they might also be infected by *Y. pestis* (Gage & Kosoy, 2005).

Plague cannot be eradicated, since it is widespread in wildlife rodent reservoirs (Stenseth et al., 2008). Environmental changes leading to change in the abundance of vectors, rodent populations, and increased contact with rodents may explain the reemergence of human plague (Duplantier et al., 2005). In conclusion, although the percentage of serological positive rodents was very small, but the results indicated that the plague agents still exist in the neighborhood. In addition, the risk of humans to be exposed by plague was high at certain time due to fluctuation of the rats and fleas density in the plague observation area in Pasuruan.

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THE RISK OF INFANT MORTALITY AT PADANG CITY

Masrizal, Melly Kristanti

Public Health of Andalas University
Jl. Perintis Kemerdekaan no. 94, Padang, Sumatera Barat
Email: masrizal_khaidir@yahoo.com

ABSTRACT

The main cause of infant mortality in Indonesia after asphyxia is low birth weight. During the last three years, Padang city has increased the number of infant mortality and amounted to 6.3 per 1,000 live births. The purpose of this research was to study the relationship between occurrence of low birth weight and infant mortality in Padang. A match case control study was conducted on February-August 2015 using ratio of case control = 1:2. Case group of 31 women who experienced had baby died in the first year of live and control group of 62 women who had alive baby, were taken by simple random sampling. Statistical analysis using bivariate analysis show the result that some variables that correlated with infant mortality (p-value < 0.05), were low birth weight, antenatal care, economic status, age of mother and parity. The result of stratification analysis showed that antenatal care was act as confounder % (∆) OR=47.10. Statistical result revealed that low birth weight associated with infant mortality. The study showed that several variables as the main determinant of infant mortality in City of Padang were low birth weight, antenatal care and parity.

Keywords: Antenatal Care, Infant Mortality, Low Birth Weight, Parity

INTRODUCTION

Infant Mortality is an event the loss of signs of life permanently that can occur at any time after a live birth. Infant refers to babies aged 0 to 12 months or under one year. Infant mortality is divided into two parts by the time of death, namely, neonatal death is the death of infants aged less than 28 days after birth, while the post-neonatal an infant mortality of more than 29 days until the end of the first year or 12 months per 1,000 live births (Ilmaskal, 2011). Infant Mortality Rate (IMR) is one of the main indicators of successful development of the National Health System in Indonesia.

The health system is also intended to improve public health including improved quality of life, intelligence, and social welfare. This is also discussed in the formulation of the Millennium Development Goals (MDGs) to improve the welfare of the communities in which it is a global and national decision. Reducing deaths among children under five years age by two-thirds within a period of fifteen years in 1990-2015 is one of the specific objectives of the MDGs in Indonesia, which means decrease of 97 per 1,000 live births to 32 per 1000 live births (Ilmaskal, 2011; Wandira & Indawati, 2012). The infant mortality rate (IMR) or the infant mortality rate is commonly used to look at the socio-economic level of a region or a country. The tendency for decrease in the IMR in Indonesia reflects the improvement of socio-economic Indonesian society in general. The decline can be seen in the period 1980 to 1985 which successfully decreased by 28.1%, whereas in quite a long period from 1970 to 1980 only can reduce infant mortality by 3% (Narendra et al., 2005).
In the ASEAN region, Myanmar is a country with the highest infant mortality rate amounting to 47.9 per 1,000 live births. Indonesia included in the category, with IMR of 25 per 1,000 live births. Infant mortality rate is classified into 4 groups: low level (less than 20), moderate level (20-49), and high level (50-99), and very high level (above 100) per 1,000 live births. Some countries were also categorized as high level of IMR including Philippines, Laos and Cambodia. Meanwhile, five other countries, categorized as low level of infant mortality rate countries (Ministry of Health, 2012).

In 2014, West Sumatra Province was in the position of the 11th ranked of Provinces with the highest level of infant mortality in Indonesia, with the number rate of 479 babies. Padang City has the highest level of IMR compare to the other Cities (Ministry of Health, 2014). Based on data from Municipal Health Office in year 2014, infant mortality rate of this City was 6.3 per 1,000 live births. The infant mortality rate has increased over the last three years, where in 2012 the infant mortality rate was 4.2 per 1,000 live births and 5.7 per 1,000 live births in 2013 (Municipal Health Office, 2013; _. 2014;_, 2015).

According to the WHO, low birth weight (LBW) baby is a baby born with birth weight less than 2500 grams. Low birth weight is a major cause of infant mortality after asphyxia. Consequently, it may contribute to the high morbidity and mortality among infants, and became a serious problem. Low birth weight also contributes to poor health outcomes (Amirudin et al., 2014; Ministry of Health, 2010).

Based on the Health Profile of West Sumatra in 2012, LBW amounted to 1,802 infants. Padang City in the position of the 9th ranked among the most LBW prevalent Districts in West Sumatra (Health Office of West Sumatra, 2012). In year 2014 the incidence of low birth weight in the city of Padang was 297 infants with a proportion of 1.7%. This number has increased over the last three years, from142 in 2012 increase to 171 of 1,000 live births in 2013, with a proportion of 0.96% (Municipal Health Office, 2013; _, 2014;_, 2015).

Research conducted by Noor Latifah explained that the ANC has a significant relationship with neonatal death and also with LBW. Another study conducted by Masni, et al (2012) explains that the ANC may six times increasing the incidence of neonatal death (Latifah, 2012; Masni & Sabalio, 2012). Another study revealed that older maternal age is a risk factor for incident of neonatal death with an OR of 6.10 (Yani et al, 2011). Geovani in 2011 explained that there was a relationship between economic status as well as birth weight and the incidence of infant mortality in Coastal area of the South District, with an OR of 4.2 and 7.82 respectively (Geovani et al., 2013).

Parity is also as a risk factor for infant mortality in the neonatal period. It was clearly explained in research conducted by Pierce, et al (2014) that parity increase three times risk of the incidence of infant mortality in the neonatal period (Masni and Sabalio (2012) explained that the greater risk of neonatal mortality was babies born with birth weight less than 2500 grams, which has 19 times more probable to death in the first year of live. Base on those problems, this study purpose to the determine the relationship between low birth weight and infant mortality in Padang City.

**MATERIAL & METHOD**

The case control study was conducted in the City of Padang in 2015. The population in this study were all women who experience had babies died in Padang starting from January until December 2014. The case population was the mother who experienced death in her
baby in Padang City based on data at Padang City Health Office and Data every Puskesmas in Padang City 2014. The control population of this study was all mothers who had alive baby in their recorded and stayed in Kota Padang based on data from the Padang City Health Office in Padang City 2014. The sample consisted of 31 cases and 62 controls. Sampling method was done by simple random sampling.

The dependent variable (the case) was mother who experienced the death of her baby, while the independent variables are low birth weight (LBW) and covariate variables were antenatal care (ANC), economic status, parity and maternal age. Statistical analysis using chi square for bivariate analysis and multivariate analysis was using logistic regression.

**RESULTS**

The characteristic of samples in case and control group is showed at Table 1.

Table 1. Univariate analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Infant Mortality Rate</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Case</td>
<td>Control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>f (%)</td>
<td></td>
</tr>
<tr>
<td>Low Birth Weight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBW</td>
<td>22  70.8</td>
<td>14  22.58</td>
<td></td>
</tr>
<tr>
<td>Not LBW</td>
<td>9  29.2</td>
<td>48  77.42</td>
<td></td>
</tr>
<tr>
<td>Antenatal Care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incomplete</td>
<td>22  70.96</td>
<td>19  30.64</td>
<td></td>
</tr>
<tr>
<td>Complete</td>
<td>9  29.04</td>
<td>43  69.36</td>
<td></td>
</tr>
<tr>
<td>Economic Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>16  51.61</td>
<td>23  37.09</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>15  48.39</td>
<td>39  62.91</td>
<td></td>
</tr>
<tr>
<td>Age of Mother</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk</td>
<td>20  64.51</td>
<td>32  51.61</td>
<td></td>
</tr>
<tr>
<td>Not Risk</td>
<td>11  35.49</td>
<td>30  48.39</td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk</td>
<td>17  54.83</td>
<td>18  29.03</td>
<td></td>
</tr>
<tr>
<td>Not risk</td>
<td>14  45.17</td>
<td>44  70.97</td>
<td></td>
</tr>
</tbody>
</table>

Based on Table 1 it can be seen that low birth weight babies was higher in case group (70.79%) compared to the control group (22.58%), the percentage of incomplete ANC was higher in the case group (70.96%) compared to the control group (30.64%), the percentage of respondents with low economic status was higher in case group (51.61%) compared to the control group (37.09%), the percentage of maternal age with higher risk was higher in case group (64.51%) compared to control group (51.61%), the percentage of parity with higher risk was higher in case group (54.83%) compared to the control group (29.03%).

Table 2. Bivariate analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low birth weight</td>
<td>5.49</td>
<td>2.18-1.82</td>
<td>0.000</td>
</tr>
<tr>
<td>Antenatal care</td>
<td>4.09</td>
<td>1.69-9.87</td>
<td>0.002</td>
</tr>
<tr>
<td>Economic status</td>
<td>1.80</td>
<td>0.74-4.36</td>
<td>0.189</td>
</tr>
<tr>
<td>Age of mother</td>
<td>1.72</td>
<td>0.70-4.22</td>
<td>0.232</td>
</tr>
<tr>
<td>Parity</td>
<td>2.67</td>
<td>1.11-6.41</td>
<td>0.028</td>
</tr>
</tbody>
</table>

Table 2 showed that p-value of LBW was 0.000 (p<0.05) suggesting that there was a relationship between the incidence of low birth weight and infant deaths in the city of Padang. Incidence of infant mortality was also correlates with antenatal care (p-value=0.002) and parity (p=0.028). While the economic status and age of mother were not correlated with incidence of infant mortality with p-value=0.189 and p-value=0.232, respectively.

Based on Table 3, it revealed that the effect of low birth weight on the incidence of infant mortality after controlled by ANC was different between two groups, with the Crude OR and its MLE OR of 47.10%. It implies that variable of ANC take a role as confounding variable. The effect of low birth weight infants on the incidence of infant mortality after controlled by economic status as a confounding variable revealed that there was no correlation between low birth weight and incidence of infant mortality, with the difference in value of Crude OR and OR its MLE, 2.20% and p-value of Homogeneity Test was 0.0807, respectively. Effect of low birth weight infants with the incidence of
infant mortality after the controlled by age of mother as confounding revealed that there was no correlation between two variables, with difference of Crude OR value and its MLE OR of 1.45% and a p-value of 0.627 for Homogeneity test. Effect of low birth weight infants on the incidence of infant mortality after controlled by parity as confounding variable showed that no relationship between two variables with the difference in value of Crude OR and its MLE OR of 7.91% and a p-value of 0.974 for Homogeneity Test.

Table 3. Confounding and interaction effect

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR</th>
<th>95% CI</th>
<th>p-value homogeneity test</th>
<th>% (A) OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenatal care</td>
<td>Incomplete</td>
<td>4.7 (2.16)</td>
<td>0.657</td>
<td>47.10</td>
</tr>
<tr>
<td></td>
<td>complete</td>
<td>2.7 (1.92)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ORmle</td>
<td>3.8 (1.42)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic status</td>
<td>Low</td>
<td>6.2 (3.89)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>4.7 (1.37)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ORmle</td>
<td>5.3 (2.09)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of mother</td>
<td>Risk</td>
<td>6.6 (1.54)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not Risk</td>
<td>4.0 (2.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ORmle</td>
<td>5.5 (2.16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ORcrude</td>
<td>5.5 (2.18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Risk</td>
<td>5.2 (2.83)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not Risk</td>
<td>5.1 (1.65)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ORmle</td>
<td>5.1 (2.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ORcrude</td>
<td>5.5 (2.18)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Stratification screening

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low birth</td>
<td>3.80</td>
<td>1.42 – 10.17</td>
<td>0.008</td>
</tr>
<tr>
<td>Antenatal care</td>
<td>2.49</td>
<td>0.89 – 6.91</td>
<td>0.080</td>
</tr>
</tbody>
</table>

Based on table 4 it can be seen that after performed screening of stratification results, it was obtained that ANC was not associated with the incidence of infant mortality with a p-value = 0.080. Variable associated with the incidence of mortality infant is low birth weight babies (LBW) with a p-value = 0.008. This indicates that the magnitude of the risk for infant mortality was 3.8 times among the low birth weight infant.

**DISCUSSION**

The results of research that has been done in the city of Padang showed that p-value of LBW=0.000 (p<0.05) suggesting that there is a relationship between LBW and the incidence of infant mortality in the city of Padang 2014. The odds ratio value in the calculation of the statistic was 5.49 (95% CI = 2.18 to 13.82). Babies born with low birth weight had 5.49 times risk for the occurrence of infant death. Results of research conducted in the city of Padang showed that the p-value of ANC = 0.002 (p <0.05), suggesting that there was a relationship between the ANC and the incidence of infant mortality in the city of Padang 2014.

The statistical analysis revealed that odds ratio was 4.09 (95% CI=1.69 to 9.87). Mothers who did not complete ANC had 4.09 times the risk for the occurrence of infant mortality. Results showed that p-value of economic status=0.189 (p>0.05), suggesting that there was no relationship between economic status with the incidence of infant mortality in the city of Padang.

The value of odds ratio was 1.80 (95% CI=0.74 to 4.36). The low economic status may increase the risk of 1.80 times for the occurrence of infant mortality. Results of research conducted in the city of Padang showed that p-value of maternal age=0.232 (p>0.05), suggesting that there is no relationship between maternal age and the incidence of infant mortality in the city of Padang. The odds ratio was 1.72 in the statistical calculations (95% CI=0.70-4.22). Maternal age >20 and ≥35 years had 1.72 times the risk for the occurrence of infant mortality. The results of research conducted in the city of Padang showed that p-value of parity=0.028 (p<0.05), suggesting that there was a relationship between parity and the incidence of infant mortality in the city of Padang.

Value of odds ratio was 2.67 (95% CI=1.11 to 6.41). Mothers who delivered babies to 1 and ≥4 times, can increase the
risk for the occurrence of infant mortality about 2.67 times. It revealed that the influence of LBW on the incidence of infant mortality after adjusted by ANC variable as confounding factor. The difference between the OR and the Crude OR was amounted 47.10% of its MLE. Based on this calculation, it can be concluded that LBW influencing the incidence of infant mortality after adjusted by variables of ANC. On the other hand, there was no relationship between LBW with the incidence of infant mortality after adjusted by economic status.

Based on the research the difference between the Crude OR and its MLE OR was 5.57% and p-value of Homogenity test was of 0.807. Based on this it can be concluded that there is no influence of LBW with the incidence of infant mortality after controlling for variables economic status results of the research that has been done in the city of Padang, it can be seen the influence of LBW with the incidence of infant mortality by age of mother in Padang Year 2014 was not a confounding and nor interaction. Based on the research the difference between the OR Crude and its MLE OR of 7.91% and a p-value of 0.974.

Based on this it can be concluded that there is no influence of LBW with the incidence of infant mortality after controlling for variables maternal age. The results of the research that has been done in the city of Padang, it can be seen the influence of LBW with the incidence of infant mortality parity in Padang Year 2014 was not a confounding and nor interaction. According to the research the difference between the OR Crude and its MLE OR of 7.91% and a p-value of 0.974 Homogenity Test.

Based on this it can be concluded that there is no influence of LBW on the incidence of infant mortality after adjusted with variable of parity. After stratification screening of LBW and the ANC variable, it was indicate that low birth weight is the most variable related to the incidence of infant mortality with a p-value of 0.008 and OR of 3.80. On the other hand, the ANC had no effect on the incidence of infant mortality, but it plays a role as a factor risk with an OR of 2.49 and a p-value of 0.080.

**CONCLUSIONS**

The low birth weight was the most variable associated with the incidence of infant mortality in the city of Padang 2014, whereas the effect of low birth weight on the incidence of infant mortality was significant after adjusted with ANC variables as a confounding factor. Therefore, health professionals should improve education about the importance of ANC and counseling about the importance of family planning.

**ACKNOWLEDGEMENT**

We were very thankful to the Faculty of Public Health, University of Andalas, as well as to the Chief Officer of Medical and Head of Public Health Center in Padang City, who had allowed the authors conducted research in Padang.

**REFERENCES**


CORRELATION BETWEEN BLOOD LEAD LEVEL (BLL) AND OSTEOPOROSIS IN POSTMENOPAUSAL WOMEN IN SURABAYA INDONESIA

Anita Dewi Moelyaningrum

Lecturer at Department of Environmental Health and Occupational Health and Safety, School of Public Health University of Jember, East Java Indonesia.
Correspondence: Fakultas Kesehatan Masyarakat Universitas Jember. Jl. Kalimantan I/ 93 Jember, East Java- Indonesia 68121. Telp. 062 (0331) 337878, Fax. 062 (0331) 322995. Email: anitamoelyani@gmail.com or anitadm@unej.ac.id;

ABSTRACT

Lead (Pb) compounds indicate that some toxic effects influence our health such of osteoporosis. This research was to identify source of lead contamination and to analyze the association between blood lead level (BLL), symptom of osteoporosis and occurence of osteoporosis among post menopause women. A cross sectional study was conducted in Surabaya City Indonesia. The sample size was 60 persons, randomly selected from post menopause women age 50-65 years. The observed variables were lead blood level, assessed using atomic absorption spectrophotometry (AAS) and bone mineral density of spine and hip, assessed using Dual X-Ray Examination Absorbtionmetry (DXA). The mean value of blood lead level was 11.135 µ/dL. Multiple regression showed that, there was significant correlation between the history of work and Blood lead level (p=0.037). There are significant association between fracture (p=0.027), bone fragility (p=0.008), spinal pain (p=0.016) with osteoporosis. Age (p=0.002), blood lead level (p=0.055), calcium consumption (p=0.022) and exercise regularly (p=0.08) were together significant correlation with the occurence of osteoporosis. These variables increase the risk of osteoporosis, simultaneously. It implies that to prevent osteoporosis, the possible source of lead contamination should be avoided, meanwhile post menopause women shall improve calcium intake and doing exercise regularly.

Keywords: Blood lead level, Osteoporosis, Post Menopause Women

INTRODUCTION

All human being and environment could not be separated each other. The contaminated environment often cause detrimental impact on health. Otherwise, the human needs become more complex in accordance with the national development and industrialization in a country. The health problems will arise since the development and industrialization is regardless the environmental aspects. Eco-development and eco-Industrial absolutely must be applied to protect the environment and human health.

Lead (Pb) is a heavy metal that is still widely spread in the environment as hazardous substance or element. It is due to this element is still widely used both in industrial activities and household supplies. Sources of lead exposure are obtained from industrial process and fuel utilization, as well as derived from household activities surroud us. Some household items were also identified containing lead, such as paint batteries, ceramics, and some cosmetics.
In Indonesia, lead is still used as a gasoline fuel mixture in a typical of fuel named “premium” from Marketing Unit V Surabaya which serves the most area of East Java, Bali, West Nusa Tenggara and East Nusa Tenggara is still using lead as an octane booster of 0.01 grams / liter (Tawafurrohim, 2008) The use of lead as a fuel mix as an octane booster actually has been banned by the world. This is due to the health effects caused by lead is very dangerous. There is one location with air lead contamination levels exceed the limit of Indonesian environmental law in Surabaya city (Prasasti, 2008).

Regularly contact between human and heavy metals was dangerous. Lead will cause a variety of health effects, because this element could not be degradable and persistent in human body. The inhaled or ingested lead will circulate through the blood flow, and reabsorbed in the kidney and brain, or stored in the bones and teeth.

Osteoporosis is widely spread through-out the world and still as a public health problem. Lead exposure will increase the risk of osteoporosis (Campbell and Auinger, 2007). Lead enter into the human body and then follow the blood circulation, to the tissues and several organs such as the liver, kidneys, lungs, brain, spleen, and heart. After a few weeks most of lead in tissues and organs will be mobilized into the bones and teeth. Lead present in the bones for decades but it can be mobilized back into the blood and organs under certain circumstances, especially during pregnancy, lactation, fractures, during osteoporosis, as well as during the growth spurt (ATSDR, 2007,2008,2009). In animal studies, it reveals that high exposure of lead were associated with reduced bone density (Escribano, 1997). It is also consistent with Grubber, et al (1996) who investigated the effects of lead exposure on rat’s bone, that 3 months exposed of lead showed a significant relationship with decreasing of in bone density.

The high exposure of lead from high emission vehicles might as risk factor of osteoporosis in Surabaya. This research was to study whether lead exposure influences blood lead level in patients with osteoporosis.

**METHOD**

This is a cross-sectional study was conducted in Surabaya, Indonesia. The study sample were 60 postmenopausal women aged 50 to 65 years old, randomly selected from patients Mitra Keluarga Surabaya Hospital at july- december 2007. Blood samples and bone scan were collected from every respondents after signing the inform consent. About ± 3 cc of venous blood were collected by laborant, and then analyze Pb blood (whole blood) conducted by Atomic Absorption Spectrophotometry method in the Balai Besar Laboratorium Kesehatan Surabaya (Indonesia accredited laboratory).

Bone density was assessed by scanning the low spine and both of the hips. Osteoporosis examination conducted by Dual X-Ray Absorbtiometri (DXA) method for low spine and both of hip. DXA was analysis in the Mitra Keluarga Satelit Hospital Surabaya. Osteoporosis occure when the bone density T< -2.5, Osteopeni when -2,5 ≤T≤-1, Normal T>-1. Data was analyzed using SPSS version 16. Statistical analysis using linear regression and mulitpe Logistic Regression test.

The ethics committe of the Airlangga University Surabaya Indonesia, approved this study (No. 075/PANEC/LPPM/2009). The blood lead level test was taken and analysis on April and May 2009.

The standard threshold of Pb content in blood according to the WHO is 20mg/dL in for adults and 10mg/Dl for children (KPPB, 2000)
RESULT

Characteristics of Respondents

There were 14 respondents (23.3%) in the 65 years old, 7 respondents (11.7%) in the 62 years old. The youngest age of the respondents was 50 years old and oldest was 65 years old, the mean age was 58.75 years old. There were 28 respondents (46.6%) finished their senior high school. The most of the respondents (88%) had their income > Rp.2,000,000.00 per month and there were 46.6% respondents had’t work anymore.

Respondents in this study were postmenopausal women in the age group 50-65 years. Women have a higher risk of developing osteoporosis than men. Menopausal status was also closely associated with the incidence of osteoporosis. Age is increasingly found osteoporosis (p<0.05) (9). Most respondents were in the age group of 65 years (23.3%), with 4 respondents (28.6%) do not suffer from osteoporosis, 10 respondents (71.4%) with osteoporosis. Most of respondent educational back-ground is senior high school or the equivalent, as many as 28 respondents (46.7%) with 15 persons (53.6%) did not have osteoporosis and 13 respondents (46.4%) had osteoporosis. Respondents in this study most of which 53 respondents (88.3%) have incomes of more than Rp. 2,000,000.00 per month. A total of 46.7% of respondents in this study had been retired.

Education can influence the understanding of a variety of health problems. Statistical analysis showed no correlation between education (p=0.461), income (p=0.752), and the current work status (p=0.323) and the incidence of osteoporosis. Although respondents mostly high school educated, but they relatively have high level of income so that access to adequate healthcare can be met, while those who are still actively working may be more mobile, where moving is a good activity for bone health as well as their socialization allows them to have access to better health information.

The Relationship between the Source of Lead Exposure (Work History, History of residence, vehicle usage history, Canned Food Consuming Habits, Smoking Habit History, Calcium Consumption with Blood Lead Levels (BLL))

There were two groups in work history, they were indoor and out door. There were 76.6% of respondents work indoor. The history of residence, showed that 45% respondents stayed on 500-1000m from the source of pollution. The vehicle usage history from the respondents showed that 48.3% often use the car (closed vehicle). Canned food indentified as source of Pb. There were 53% respondents had canned food consuming habits more the once a years. All respondent werent the smoking habit history, because of they were a women and it didnt the culture. The data showed that there were 50% of respondents usually consume the calcium supplements or drink a calcium milk more than once in a years.

The mean blood lead level in the respondents are 11.135 µ/dL with a maximum lead content of 28.95 µ/dL. Regression test showed that work history significantly related to blood lead levels (p=0.037<0.05). Work outdoor allows respondents to get more contact with the sources of environmental lead pollution. Potential sectors in affecting air quality in Surabaya city in general is the transportation sector.

Respondents’ residences were mostly in the range of 500-1000 meter distance from the pollution source, riding motorcycle not in the heavy traffic, rarely consumed canned food, no smoking. Althought Pb absorption will increase if there is a deficiency of calcium (10-12), thus Pb metabolism associated with hormones (13), but in this study the source
of calcium measured in the frequency. The result of BLL was completely see in table 1.

Table 1. Respondents Blood Lead Level (BLL)

<table>
<thead>
<tr>
<th>Blood Lead Level (µg/dL)</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 20</td>
<td>8</td>
<td>13.3%</td>
</tr>
<tr>
<td>≥ 20</td>
<td>52</td>
<td>86.6%</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100%</td>
</tr>
<tr>
<td>Mean</td>
<td>11.135</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>1,932</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>28.95</td>
<td></td>
</tr>
</tbody>
</table>

The Relationship between independent variables with the occurrence of Osteoporosis

The results of Multiple Logistic Regression test showed that blood lead levels (BLL) have a significant association with the occurrence of osteoporosis (p=0.055) along with variable of age (p=0.002), the consumption of milk or calcium supplement (p=0.022) and exercise habits (p=0.008).

The adult blood lead level standard of World Health Organization (WHO) was 20 µ/dL. There are several women that exceed from WHO regulation. The high of blood lead level showed that there are several risks for the health. The result of Deya Bone Densitometer was completely seen in table 2, Fig 1 and Fig 2.

Table 2. The result of Deya Bone Densitometer

<table>
<thead>
<tr>
<th>Bone Mineral Dencity (T-Score hips and spine)</th>
<th>Status</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&gt;-1</td>
<td>Not Osteoporosis (Normal and osteopenia)</td>
<td>35</td>
<td>58.3%</td>
</tr>
<tr>
<td>T &lt;-2,50</td>
<td>Osteoporosis</td>
<td>25</td>
<td>41.6%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

In which any increase in blood Pb 1g/dL, the risk of osteoporosis increased 0.848 with increasing age, did not take calcium and exercise (table 3). The blood lead level together with other variables such as age, calcium consumption and exercise habits had an association with the osteoporosis.

From the results of statistical analysis showed that each increase in age will increase the risk of osteoporosis by 1.5 times, people who never consume milk or calcium supplements had 1.6 times the risk of developing osteoporosis than those who frequently consume, and people who never do exercise have 30.8 times the risk of developing osteoporosis than people who exercise regularly three times a week.

Table 3. Result of Multiple Logistic Regression, Pearson and Spearman correlation test

<table>
<thead>
<tr>
<th>Variabel</th>
<th>Multiple Logistic Regression</th>
<th>Pearson and Spearman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.002</td>
<td>1.5</td>
</tr>
<tr>
<td>Blood lead level</td>
<td>0.055</td>
<td>0.848</td>
</tr>
<tr>
<td>Calcium consumption</td>
<td>0.022</td>
<td>0.021</td>
</tr>
<tr>
<td>Often</td>
<td></td>
<td>1.6</td>
</tr>
<tr>
<td>Exercise habits</td>
<td>0.008</td>
<td>0.044</td>
</tr>
<tr>
<td>Rarely</td>
<td></td>
<td>30.8</td>
</tr>
<tr>
<td>Body Mass Indeks</td>
<td>0.211</td>
<td></td>
</tr>
</tbody>
</table>

Fig 1. Spine Osteoporosis
The Relationship Between fracture, hunchback, reduced height, back pain with the Occurrence of Osteoporosis.

Fracture, hunchback, reduce height, back pain were the sign of osteoporosis. The Multiple logistic regression showed that fracture, hunchback and back pain sign were correlated with osteoporosis. Bone loss increases the risk of fractures \((p=0.027)\), hunchback \((p=0.008)\) and back pain \((p=0.016)\). This is due to the decline in bone mass.

DISCUSSION

Lead \((\text{Pb})\) can enter the body through the respiratory tract, absorption and digestive tract \((\text{ingestion})\). \text{Pb} distributed into 3 main parts of the body, that is blood, Soft Tissue and Bone \((\text{EHC WHO, 2006})\). \text{Pb} deposited in bone. As much as 90-95% \text{Pb} that entered the body accumulated in bones, a little stored in the brain \((\text{Barry and Mossement, 1970})\). \text{Pb} has a long half-life in bone, especially in people who were exposed to lead in the past and for a long time.

The results of this study showed that blood lead levels were significantly associated with the occurrence of osteoporosis. Blood lead level for adult was \(\leq 10 \mu\text{g/dL} \) \((\text{ATSDR, 2013})\). The respondents were shown that their blood lead level was more than 10 µg/dL and they had osteoporosis. \text{Pb} absorbed by bone. \text{Pb} known to have effect on osteoblasts, osteoclasts and condroict, which are affected on osteoporosis \((\text{Carmouche, 2005})\). Studies on animals showed that a rise in \text{Pb} exposure degraded bone density \((\text{Gruber, 1996})\), inhibited osteoblastogenesis and decreased bone strength \((\text{Ronis, 2001})\). There is a relationship between the Infant mean blood \text{Pb}, with mothers who have high blood lead levels in the median cohort 7.7 µg/ dL, which infant has a shorter body length of 2 cm at the age of 15 months, compared with mothers who not exposed to \text{Pb} \((\text{Shukla, 1989})\).

Levels of \text{Pb} blood describe the movement of \text{Pb} from the bones into the bloodstream. If there is a process of bone resorption, \text{Pb} from the bone will be released to blood. \text{Pb} Blood is also an indicator of exogenous \text{Pb} exposure that is happening and \text{Pb} exposure in the past that stored in bones \((\text{Hu et al, 1998})\). Although 90-95% \text{Pb} stored in bones \((\text{Campbell and Auinger, 2007})\), \text{Pb} will lead to blood flow in certain conditions such as pregnancy, lactation, osteoporosis etc \((\text{Squib, 1997})\).

This results also consistent with the results other research that there are relationship between lead exposure in the past with occurrence of osteoporosis \((\text{Campbell and Auinger, 2007})\), Bone Mineral Density was significantly associated with the amount of lead in the blood \((\text{Nash, 2004})\), and low bone mineral density in children associated with \text{Pb} blood serum \((\text{Riedt, 2009})\).

There was a relationship between lead exposure in the past with the occurrence of osteoporosis \((\text{Campbell and Auinger, 2007})\). The Bone Mineral Density \((\text{BMD})\) was significantly associated with the amount of lead in the blood \((\text{Nash, 2004})\), and the low BMD in children associated with \text{Pb} blood serum.

There are possibilities that in the past, respondents had been exposed by \text{Pb}, furthermore, \text{Pb} deposited to bones.
when they get older, in line with the weakening of the balance in bone remodeling process, Pb mobilized into the blood. Pb are toxic to soft tissues and organ systems (4-6). At the low level of toxicity, Pb has been able to influence the body's biochemical processes.

The risk of osteoporosis will increase with increasing age, but indeed it also influenced by other factors. Bone remodeling process in young adult is on balance, and will be declined in line with increasing age, so that the risk of osteoporosis will be higher.

Nutrition plays an important role on health including bone mass and fracture risk. Pb has a role as a calcium antagonist, which is calcium intake will reduce the absorption of Pb in adults and animals (4-6). There is a relationship between calcium intake with the decrease of blood Pb (P=0.02) (Yuan et al, 2004).

Exercise dosage must be appropriate because if it is too light it will not be useful and if it is too heavy it will be dangerous. Cooper et al 1988; Snelling et al 2001 said that Physical activity is proven to lower the risk of hip fractures (Campbell and Auinger, 2007). People who are too lazy to move or exercise will obstruct the process of its osteoblast (the process of bone formation). In addition, bone mass density will decrease. The more movement and exercise, the muscles will spur bone to form a mass. Bass et al said that Observations conducted to athletes showed that athletes had higher BMD than the people that did a rarely exercise (WHO, 2003). Pb levels <20mg/dL are supposed to influence the metabolism of vitamin D in the body, while Pb>30μg/dL has been able to interfere with bone metabolism (Brasslow et al, 2002).

Osteoporosis can be called as a thief in the night, people who suffered from osteoporosis do not feel a specific soreness. It will be felt when the bones are fractured that will cause pain, deformity, and impaired function. Detailed history of patient risk factors is helpful in establishing the diagnosis. Analysis of risk factors is important to determine whether the examination of bone mineral density (BMD) needed or not, which is important to establish the diagnosis.

Fractures, hunchback, back pain, reduced height are the signs of osteoporosis. If the bone density is greatly reduced, the bones will be crushed, so that will develop bone pain and deformity. The destruction of the spine will cause chronic back pain. Fragile spine might be destroyed spontaneously or due to minor injuries. Pain will arise suddenly and felt in certain areas of the back, and the pain will be increased if the patient standing or walking. If some spine shattered, it will form an abnormal curvature of the spine (Dowager's hump), which causes muscle tension and pain.

CONCLUSION

Work history is associated with blood lead levels. Fracture, humpback and back pain are the sign of osteoporosis. Age, blood lead level, calcium consumption and exercise habits were together significant correlation with the occurrence of osteoporosis. Age, Blood lead Level, calcium consumtion and exercise habits were the factors to increase the risk of osteoporosis.

Keep a healthy lifestyle such as avoiding contact with the sources of Pb pollution, meet the needs of calcium, and regular exercise to prevent osteoporosis.

CONFLICT OF INTEREST

The author declares there is no conflict of interest regarding the publication of this paper.
ACKNOWLEDGMENT

The author would like thanks to Prof. Dr. Djoko Roeshadi, dr., SpOT., FICS, and Prof. Dr. H.J. Mukono,dr., MS., MPH for discussion.

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EFFECT OF POSTPARTUM BREAST CARE AND CONSUMPTION OF HERBS “GEPYOK” ON THE ADEQUACY OF BREAST MILK

Nurul Pujiastuti, Mustayah, Ni Wayan Dwi Rosmala

Lecture of Polytechnic of Health Malang
Email: nurulpujiastruti@gmail.com

ABSTRACT

Postpartum breast care is a treatment to facilitate the production of breast milk. Traditional herbal medicine is useful to stimulate breast milk production, refresh the body, eliminate fishy odor of body waste, and increase appetite. Research purposes to analyze the effects of postpartum breast care and traditional herbal medicine on the adequacy of breast milk production.

A quasy experimental research was conducted among breast feeding mothers. The study sample was divided into two group: treatment group consist of 30 mothers and control group consist of 30 mother, which determined by purposive sampling technique. Mann Whitney test showed that there is a significant difference of breast milk adequacy between the treatment group and the control group (p=0.002).

Mother who consumed traditional herbal medicine with the treatment of breast, milk adequacy optimized with an average of 36.95 compared to mothers who simply do breast care with an average of 24.05. We advice to keep doing breast treatment as well as consume self administered traditional herbal medicine to increase milk production.

Keywords: Postpartum Breast Care, Herb, Adequacy of Breast Milk

INTRODUCTION

Breast care during lactation is an activity carried out consciously and regularly to maintain the health of the breast while nursing. Breast care is useful for increasing breast milk production. In addition, maximizing the production of breast milk, it can prevent mothers from the suffering breast swelling and clogged milk ducts. The breast treatment should start as early as possible in 1-2 days after delivery, and it better carried out regularly twice a day. By doing breast care during postpartum periods, mother can implemented the lactation smoothly, therefore it will provide sufficient breast milk for newborns.

Some of mother did not care their breast may due to poor knowledge or lack of information about the important of breast care, anxiety and lack of motivation as well as limited time available for domestic activities in household.

In Javanese culture, there was a habit related to breast feeding practice in the community. Lactating mother usually treated using traditional herbs, so called "gepyok" during lactation. Medication practice using traditional herbs "gepyok" was applied to increase breast milk production, to meet nutrients requirement of babies. The quality and quantity of breast milk is influenced by maternal nutrition, particularly maternal food intake. In addition, the lactation mothers who consume traditional herbs "gepyok" during childbirth may increase their breast milk production. The materials of herbal "gepyok" are consist of natural ingredients in which its efficacy had been exist in community as ancient’s heriatges.
Materials used including ginger, turmeric, tamarind, sinom leaves, leaf beluntas, lampes, with sugar. All material is processed in household and without any certain preservatives.

Based on research conducted by Hidayati in Haji Adam Malik Hospital in 2008, it was found that almost all respondents (80%) had an increasing milk production after doing regular postpartum breast care. Base on statistical analysis, the results showed there was significant relationship between the treatment of breast and breast milk production (p=0.002).

The general objective of the study is to analyze effects of postpartum breast care and herbal consumption "Gepyok" on adequacy of breast milk. The specific objectives of this study include: 1) Identifying breast care postpartum and consumption of herbs "gepyok" among child bearing mothers, 2) identify the adequacy of breastfeeding mothers during childbirth, 3) to analyze the effect of postpartum breast care and consumption of herbs "gepyok" on the adequacy of breast milk.

**MATERIAL & METHOD**

This research was a quasy experiment. The treatment group was mother who did postpartum breast care and consumed herbs "gepyok", meanwhile control group was mothers who did postpartum breast care without additional treatment. The population study was mothers who breastfeed their babies during childbirth with population size of 120 lactating mothers by June, 2012. The study sample was 50% of the total population, or 120x50%=60 childbearing mothers, with inclusion criteria, as follow: 1) postnatal day 7; 2) mothers who breastfeed their babies during childbirth; 3) mother who consumed herbal medicine "gepyok" during childbirth; and 4) willing to become respondent. Sample was determined purposively with a according to researcher’s considerations.

**RESULT**

The results of the Mann Whitney test differences adequacy between the treatment group and the control group p=0.002 which means that H1 is accepted it means there is a significant difference adequacy of breast-feeding among lactating mothers who consume herbal gepyok accompanied breast care postpartum to mothers who simply do breast care postpartum course, where the group mothers who consume herbal breast care postpartum gepyok with more optimal adequacy of their milk with an average of 36.95 compared to mothers who simply do postpartum breast care with an average of 24.05.

**DISCUSSION**

Regular postpartum breast care can add and facilitate milk production, because doing massage will stimulate prolactin levels to continue produce breast milk by baby's sucking stimulation. Adding the consumption of herbs "gepyok" made from natural ingredients such as ginger, turmeric, tamarind, sinom leaves, beluntas leaf lampes, can increase milk production. But it shall to be noted that the herbs consumed should be blended itself without any preservatives.

Postpartum breast care is an effort to continue breast care after women deliver their babies as advance care during pregnancy, which has launched aiming milk production and increase milk production. While herbal "gepyok" made from natural ingredients whose composition is very useful to help expedite and increase milk production.
Adequacy of Breast Milk

Adequacy of breast milk in treatment group and control group was showed in Table 1.

Table 1. Respondent Distribution based on the Adequacy of Breast Milk in Treatment Group and Control Group

<table>
<thead>
<tr>
<th>Adequacy of Breast Milk</th>
<th>Treatment Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>17 (57%)</td>
<td>7 (23%)</td>
</tr>
<tr>
<td>Moderate</td>
<td>10 (33%)</td>
<td>11 (37%)</td>
</tr>
<tr>
<td>Less</td>
<td>3 (10%)</td>
<td>12 (40%)</td>
</tr>
<tr>
<td>Total</td>
<td>30 (100%)</td>
<td>30 (100%)</td>
</tr>
</tbody>
</table>

Based on table 1 showed that most respondents in treatment group (57%), have good adequacy of breast milk meanwhile most of responden in control group was less adequate (40%).

Influencing of Breast Care and herbs "Gepyok" Consumption on Adequacy of Breast Milk

Table 2 showed results of statistical analysis using Mann Whitney test.

Table 2. Statistical Analysis using Mann Whitney on Adequacy of Breast Milk between Treatment Group and Control Group

<table>
<thead>
<tr>
<th>Adequacy of breast milk</th>
<th>Group</th>
<th>n</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Treatment group</td>
<td>30</td>
<td>36.95</td>
<td>1108.50</td>
</tr>
<tr>
<td></td>
<td>Control group</td>
<td>30</td>
<td>24.05</td>
<td>721.50</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td></td>
<td>p=0.002</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 revealed that there was significant different of breast milk adequacy between treatment group and control group (p=0.002). Mothers who consume did postpartum care accompanied by consumption of herbal medicine “gepyok” can meet the adequacy of breast milk with mean rank of 36.95 compared to mothers who did postpartum breast care without herbal consumption, in which they had mean rank of 24.05.

Breast milk production can be increased or decreased depending on the stimulation of the mammary gland. Factors influencing the formation and the production of breast milk among childbearing mothers are mother's diet, sucking behaviour of babies, breastfeeding frequency, the history of disease, psychological factors, birth weight, and breast care.

The adequacy of breast feeding was influenced by the consumption of herbs "gepyok" during postpartum breast care. This traditional medicinal material may contain several bioactive compounds that useful to increased milk production and stimulate breast milk release. Moreover, most respondents were have educational level of junior high school, it is possible to receive better understanding of the benefits of breast treatment, as well as to stimulate a good habits of mothers after childbirth. Routine consumption of herbal medicine "gepyok", will make mothers feels the benefits. The ingredient of herbal medicine "gepyok" such as beluntas, tamarind, ginger, turmeric, lampes, sinom, and others, may stimulate breast milk production. Moreover, women feel more production of milk by routinely breastfeed. They believe that by feeding her baby, will less likely to be affected by breast cancer. In addition breast feeding practice also save costs from milk formula purchase.

CONCLUSION

Adding traditional herb medicine “gepyok” consumption in regular breast care during childbirth significantly increase breast milk production as well as breast milk release compare to breast care alone. However, it is necessary to identify and deep exploration about the ingredients used in manufacture of herbal "gepyok" because there are various types of herbal...
materials and composition used as ingredients of herbal medicine in community, especially in District of Mojokerto.

**SUGGESTION**

1) For public, especially nursing mothers should to improve of breast care and get counseling and breastfeeding as well as follow the advice of health professionals.

2) For health workers, they should assist postpartum mothers to prepare breast feeding and improve public awareness about the importance of breast care for breastfeeding mothers by providing a good counseling to encourage motivation during pregnancy until delivery.

3) Examining the ingredients and bioactive compound of herbal medicine “gepyok” is suggested for further research.

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EFFECT OF COUNSELLING ON THE INCREASING OF KNOWLEDGE ABOUT MENARCHE AMONG STUDENT GIRLS IN A JUNIOR HIGH SCHOOL

Sondang Sidabutar

Efarina University
Pematangraya, 21162, Indonesia
Email: sondang _sidabutar73@yahoo.com

ABSTRACT

Menarche is the onset of first menstruation, might become a physiological problem faced by adolescent girls. A preliminary study showed that most of students in junior high school had poor knowledge about menarche. The objective of this study was to evaluate the level of knowledge about menarche before and after counseling, among students in State of Junior High School 5 (SMPN 5) in Surabaya. This is a pre-experimental research on a single group using pre and post-test design. The sample size of 45 student girls was obtained from 155 students as population by using cluster random sampling. Statistical analysis using paired T-test was done to test the differentiation of level of knowledge before and after counselling. There was a significant difference of level of knowledge before and after counselling (arithmetic calculation 17.38 T > T table 1.684). Based on this result, it can be concluded that the good knowledge was obtained after received counselling. Midwives were expected to involve and cooperate with the school to enrich the education material related to menarche in a reproductive health education. By improving knowledge and deep insight about menarche among adolescents, they will not worry and be more careful in their peers interaction and socialization.

Keywords: Menarche, Adolescent, Girls, Knowledge

INTRODUCTION

Puberty is a stage in human development or the period during which adolescents reach sexual maturity and become capable of reproduction. This period was marked by the development of secondary sex characteristics, including menarche in females. In humans, puberty occurs at the onset of adolescence, between the ages of about 11 and 14 in girls and 13 and 16 in boys. Adolescence is a transitional stage of physical and psychological development that generally occurs during the period from puberty to legal adulthood. This stage is accompanied by the changes of sexual maturity and reached reproductive ability (WHO, 2017).

The first period is used as a criterion of sexual maturity of girls, but this is not the first and last physical changes that occur during puberty. When menstruation occurs, the sex organs and secondary sex started to develop, although it still immature. Menstruation is more considered as the central point in puberty (Hurlock, 2004).

Teenagers who are looking for self-identity, usually they very receptive to the information and issues related to the function of reproductive organs. Their curiosity about sexual-related problem, may lead adolescents towards the implementation of free sexual intercourse (Manuaba, 1999).

Puberty is influenced by heredity, race, climate and environment
Menstruation is a periodic uterine bleeding that began with secretory of endometrium tissue, which spend the duration approximately 14 days after ovulation. The average duration of menstruation was 5 days, with the range about 3-6 days and the average of blood loss approximately 50 ml per day. There is a large variation of blood loss during menstruation with the range of 20-80 ml, among women (Bobak et al., 2000).

Problems related to reproductive health among adolescents is still needs serious attention. Issues on reproductive health among adolescents are not just a sexual problem, but also concern about all aspects of reproductive organs. If we ignore about adolescent reproductive health when they getting menarche, or when teenagers enter in the wrong peer relationship, it may cause unwanted pregnancy and its consequences such as abortion (www.fkm.undip.ac.id., 2009).

The previous research conducted in State Junior High School 4 (SMPN 4) Jember, East Java Province on 20 student girls, revealed that about 65% of seventh grade students feel anxiety to face the menarche (Aditya, 2005). There was an increasing rate of absent from schooling among student girls in State Junior High School 5 Surabaya during 2005-2009. It was found that number of students who absent due to menstruation were about 26.16% in year 2005-2006, increase to 28.40% in year 2006-2007 and increase higher to 33.14 % in year 2007-2008.

A preliminary research conducted on May 2009 in SMPN 5 Surabaya on 15 student girls as study subjects. The results showed that nobody (0%) had a good knowledge, 20% of students had a fair knowledge and 80% had poor knowledge about menarche.

The factors affecting the readiness of menarche including access of information prior to menstruation (knowledge), nutritional status or children maturity, environmental support, attitudes towards menstruation before menarche and socio-economic factors (http://www.Remaja and permasalahannya.co.id, cited June 9, 2009). A good knowledge about menstruation will help the young girls to face menarche. (Http://Medicine.ui.ac.id, cited 11 June 2009). The problems which are extremely complex often make adolescents in a difficult situation. This condition affecting children lost their opportunity to learned the right things during their puberty. Children who did not psychologically prepared to face the physical and psychological changes, it would be cause traumatic experience for teenagers (Http://Medicine.ui.ac.id, cited 11 June 2009).

Readiness to menarche can be formed when the teenager had enough knowledge about what exactly happen during this period. To overcome the lack of knowledge about menarche among adolescents, it was recommended that parents should provide reproductive health education as early as possible. As teenagers having a good knowledge on reproductive health, they would responsible for their reproductive health. Therefore, it is important to improve knowledge among young women, especially knowledge about menarche. This effort could be carried out at school in a counselling on reproductive health as school health activities (Nania, 2008).

Based on the above data it required a study to evaluate the increasing knowledge of student girls in seventh grade before and after Counseling about Menarche in SLTPN 5 Surabaya.

MATERIAL & METHODS

This is a pre-experimental study using pre- and post-test design conducted on a single group. The study subjects were student girls at State Junior High School 5 (SMPN 5) Surabaya. Research was carried out during April until September 2009. The population was student girls of
in seventh grade at SMPN 5 Surabaya as many as 155 girls. The study samples were 45 students girls, selected from a population of 155 students, by using cluster random sampling method. Classes were as cluster. There were 8 classes in seventh grade, and each class was represented by 5-6 students.

The independent variable was counseling about menarche, and the dependent variable was knowledge about menarche. Data was collected using questionnaires, before and after counseling. All subjects were asked to self fill the questionaires, anominly. Counseling was conducted on September 9, 2009 at 10:30 pm by researchers, accompanied by one of the teacher in SMPN 5 Surabaya.

Univariate analysis was carried out to describes the distribution of subject. Level of knowledge was assessed using scoring for the right answer. The difference of knowledge before and after counseling was analyzed using paired T-test.

RESULT

Menarche
Among subjects in seventh grade, there were 28 girls have menarche experience and 17 girls had not menarche yet. Data were presented in Table 1.

Table 1. Distribution of subjects by status of menarche

<table>
<thead>
<tr>
<th>Menarche</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>17</td>
<td>37.78</td>
</tr>
<tr>
<td>Not yet</td>
<td>28</td>
<td>62.22</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1 showed that majority of subject (62.22%) have not getting menarche yet.

Level of Knowledge
The level of knowledge of student girls in SMPN 5 Surabaya before and after counselling was divided into three categories: good, moderate, and poor. Data was performed in Table 2.

Table 2. Distribution of subjects base on level of knowledge before and after counseling

<table>
<thead>
<tr>
<th>Knowledge about menarche</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
</tr>
<tr>
<td>Good (76% - 100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Moderate (56% - 75%)</td>
<td>6 (13.3%)</td>
</tr>
<tr>
<td>Poor (≤55%)</td>
<td>39 (86.7%)</td>
</tr>
<tr>
<td>Total</td>
<td>45 (100%)</td>
</tr>
</tbody>
</table>

Table 2 showed that before getting a counseling, most of student girls (86.7%) had poor knowledge. After they were exposed by reproductive health education, particularly about menarche during counseling activities, there was an increasing level of knowledge. Most of student girls (71.1%) had a good knowledge about menarche after getting counselling.

Table 3. Score of knowledge of student girls before and after received counselling.

<table>
<thead>
<tr>
<th>Descriptive Value</th>
<th>Knowledge Score Before</th>
<th>Knowledge Score After</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>6.6</td>
<td>60</td>
<td>Calculate T &gt;</td>
</tr>
<tr>
<td>Maximum</td>
<td>66.6</td>
<td>100</td>
<td>T table 17.38 &gt; 1.684</td>
</tr>
<tr>
<td>Mean</td>
<td>35.88</td>
<td>82.34</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>6.98</td>
<td>4.85</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 showed the descriptive value of knowledge score before and after intervention (counselling). The mean value of kowledge score increase significantly from 35.88 before intervention to 82.34 after intervention. To answer the hypothesis, whether there was a differentiation of knowledge about menarche among student girls in seventh grade, before and after counselling, data were analyzed using paired T test. Base on statistical test, it indicated that there was a significant difference score of knowledge.
among student girls before and after getting counselling (Calculate T>T table 17.38>1.684).

DISCUSSION

Reproductive health problems among adolescent was very important to be discussed, because this problems usually associated with their growth and development. According to the WHO, reproductive health is a state of physical, mental and social wellbeing not merely absence of disease or disability in all aspects related to the reproductive system, its functions and processes. Reproductive health implies that people are able to have a responsible, and that they have the capability to reproduce and the freedom to decide it.

The development stage of adolescence influenceing and reflects the development of sexual behavior among them. During sexual development, adolescents enter two period of developments: 1) primary sexual development that leads to maturity of sexual organs, and 2) secondary sexual development, that leads to changes in physical performance. During those periods, adolescents should be prepared to face their physical and physiological changes. They should be educated with an appropriate knowledge on reproductive health, especially sexual knowledge. If they did their curiosity and learn about sexual aspect without proper guidance, it could be dangerous (BKKBN, 2003). In fact, studies show that many school teenagers were fell into poor behavior related to reproductive health. The most important moment in the onset of puberty is the first menstruation or menarche. Moment of menarche occure in various age among adolescent girls. It range from 10 years old until 16 years old, with the average of 12.5 years (Wiknjosastro, 2005).

Problems related to reproductive organs among adolescents, occasionaly unrecognized by their parents, because they assume that their sons or daughters remains too young, and still schooling. Parents usually omit the possibility that their children might be facing a complex problems, or diseases related to the reproductive organs. In fact, teenagers who are looking for self-identity were very receptive to the new information relating to the reproductive organs function problems. This situation would stimulate sexual relationship behaviour freely among adolescents.

All subjects in this study, were classified as a teenagers, a stage of human life cycle that occur a transition from childhood to adulthood (BKKBN, 2003). Base on subjects’ age, it categorized as early teenagers. In this stage they lack experience in the community, therefore have a poor knowledge. According to Bobak (2005), early adolescence (10 to 14 years) did not able to utilize the information for their life. They often doing trial and error without considering its consequences. Therefor we can conclude that age affects level of knowledge, the more mature the person, the higher level of knowledge, and easier to adapt in the surrounding environment.

There are many factors influencing someone’s behavior, including level of knowledge and better personal understanding among individual. Notoatmodjo (2003), state that knowledge is the result of cognition after someone perceiving a specific object. It acquired through experience or education by perceiving, discovering, or learning. This perceives occurs through the human senses, the senses of sight, hearing, smell, taste, and touch. Most human knowledge is obtained by the eyes and ears contact.

According to WHO (2017), Health education is any combination of learning experiences designed to help individuals and communities improve their health, by increasing their knowledge or influencing
their attitudes. Health education was done by spreading the message, confidence, so that people are not only aware, know and understand, but also willing and able to do a specific health behavior suggested by the educator.

Our data of level of knowledge about menarche, before and after getting a counselling showed in Table 2. Before getting a counselling, majority of student girls (86.67%) had poor knowledge, but no students had good knowledge. Meanwhile, after getting a counselling, there were no students had poor knowledge, while the proportion of students who had good knowledge increased about 71.11%. Base on descriptive data, there was an increasing score of knowledge about 46.46 (Δ=46.46). This increasing is also statistically significant.

Based on the preliminary survey conducted previously, it also revealed that majority (80%) of students had poor knowledge. This condition was very worrying in teenagers because they lack of information about reproductive health. Ignorance on reproductive health, especially several problem related to menarche may harmful for teenagers. Un-intended pregnancy and its consequences such as abortion may caused by poor knowledge about reproductive health among adolescents (Elizabeth, 2002).

Knowledge can be acquired through school and experiences. The level of knowledge would affect teenagers’ socialization in their peers. Generally, people response their environment according to their knowledge and previous information. In related to menarche, adolescent girls adopt the information from surrounding source, including their friends or neighbor.

The role of health workers to provide information about reproductive health can be implemented by conducting a counselling program targeted for adolescents group. This program can be implemented through school health program in Junior High School. Education about menarche for adolescent girls in junior high school was very important. The education could be carried out using various appropriate methods and attractive instruments such as flipchart contained picture of female reproductive organs and the menstruation cycle.

**CONCLUSION**

Based on results it can be concluded that: 1) the knowledge about menarche among student girls before getting a counselling were less than knowledge after getting a counselling, with a mean value of 35.88 ± 6.98 and 82.34 ±4.85, respectively; and 2) there was a significant difference of the knowledge about menarche among student girls before and after intervention (Calculate T>T table 17.38>1.684), with score increasing (Δ= 46.46).

**ACKNOWLEDGEMENT**

We extend our gratitude to the Head of SMPN 5 Surabaya along with the teachers who have assisted us during data collecting in school.

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FACTORS ASSOCIATED WITH THE INCIDENCE OF INFANT MORTALITY IN THE BANJAR DISTRICT

Syamsul Arifin¹, Muhammad Isa², Fauzie Rahman³, Fahrini Yulidasari³, Dian Rosadi³, Nur Laily³

¹Student of Public Health Doctoral Program, Public Health Faculty, Airlangga University
²Medical Study Program, Medical Faculty, Lambung Mangkurat University
³Public Health Study Program, Medical Faculty, Lambung Mangkurat University

Email: syamsularifin82@yahoo.co.id

ABSTRACT

According to the health profile of South Kalimantan Provincial Health Office in 2014, neonatal and infant mortality rate (IMR) was quite high from 2012 to 2014. Infant mortality rate in Banjar district at that time frame was various and tend to increase in year 2014. Therefore, it is necessary a study to analyze factors associated with the incidence of infant mortality in Banjar district. A case control study was conducted at Banjar district. The population in this study was all mothers with babies which derived from District Health Office data years 2015-2016. Total sample of 60 mothers were divided simetrically into case group consist of was women of childbearing age who have a history of stillbirth (30 women) and the control group consist of women of childbearing age who have a history of live births (30 women). Data were collected by interviewing using a structured questionnaire as the instrument. The independent variables in this study are several factors including infant, maternal age, maternal education, maternal health conditions, number of births, birth spacing, economic status, and access to health facilities. The Chi-square analyses with a confidence level of 95% revealed that there is a significant association between the infant's condition with the incidence of infant mortality in Banjar District (p-value = 0.0001) and there was no significant association between maternal age (p-value = 0.147), maternal education level (p-value = 0.446), maternal conditions (p-value = 0.106), the number of births (p-value = 1.000), birth interval (p-value = 1.000), economic status (p-value = 1.000), access to health facilities (p-value = 0.238) and the incidence of infant death in Banjar District. Therefore, it needs further research related to other factors that affect the incidence of infant mortality with a broader scope of research, to deep explore about the direct and indirect causes of infant mortality in order to do early prevention of it.

Keywords: Infant Mortality, Neonatal Mortality, Number of Birth, Maternal Health Care

INTRODUCTION

The infant mortality rate (IMR) is one of important indicator of public health associated with nation development, beside the other indicators. IMR is very sensitive indicator for identify the availability or utilization and to assess the quality of antenatal and post-natal services. IMR influenced by indicators of morbidity and nutritional status of mother and children. In addition, IMR also deals with the regional income per capita, family income, number of family members, education level of mothers and nutritional status of family.

Infant mortality rate not only describe the successful development regarding health sector, but became part of development indicators other public
sectors. One of reason is because IMR directly associated with the average of life expectancy of the population in a specific area. Whereas, the average life expectancy as one of three indicators of Human Development Index (HDI) (Center of Reproductive Health UGM, 2009).

Infant mortality rate in Indonesia was still quite high. Based on the Indonesian Demographic and Health Survey, infant death rate in a period of five years prior to the survey (2008-2012) was 32 deaths per 1,000 live births. It means, there was a single baby born in every 31 babies born in Indonesia died before the first year of life. Sixty percent of infant mortality occurred in the first month of life. It contributed to neonatal mortality rate about 19 deaths per 1,000 live births. Eighty percent of children died before the first year of life (1-11 months), contributed to neonatal death 13 deaths per 1,000 live births (Ministry of Health, 2012).

Based on the health profile of South Kalimantan, infant mortality rate in Banjar District was 12 deaths per 1000 live births in year 2012, then decreased to be 11 deaths per 1000 live births in 2013 and increased more higher to 14 deaths on 1000 live births in 2014 (South Kalimantan Provincial Health Office, 2014).

Many factors influence infant death. Infant mortality might be caused by lack of maternal awareness about health, including mother’s awareness to get the uterine examination, un-intended pregnancy, pregnant in young age, short pregnancy interval, late pregnancy, poor maternal nutritional status during pregnancy, unsafe food consumed by mother, as well as inadequate hygiene sanitation facilities. Poor pregnancy and other factors can also affect intra uterine condition, as well as physical and psychological factors, environmental factors, and socio-cultural factors (Sulistyawati, 2009).

Consider that child survival greatly determine the quality of human resources in the future, hence IMR should be paid by attention among related sectors. It required an appropriate intervention to decrease the death rate. An effective intervention would be achieved to reduce infant mortality, with a condition that all effort were addressed to improve the child survival (Bappenas, 2009).

Based on those problems, it was required a study to analyze several factors associated with the incidence of infant mortality in Banjar District, South Kalimantan.

**MATERIAL & METHOD**

This was a case control study using retrospective approach, conducted in Banjar District, South Kalimantan. Population of study was all mothers who had babies recorded in Banjar District Health Office Data during year 2015 until 2016. The study sample was determined by using a minimal sample. The case group was women of childbearing age who have a history of stillbirth, as amounted of 30 women, whereas the control group was women of childbearing age who have a history of live births, as amounted of 30 women. Using a ratio case: control by 1:1, then required total sample of 60 women. Data and information were collected by interview using a structured questionnaire as an instrument. The independent variables in this study were several factors including infant age, maternal age, maternal education level, maternal health conditions, number of births, birth interval, economic status, and access to health facilities. The dependent variable was incidence of infant mortality.

Univariate analyses was carried out to described distribution of each independent variables, while bivariate analysis using chi-square with confidence degree of 95 %, was used to identify the
association between independent variables and dependent variable.

RESULTS AND DISCUSSION

The distribution of independent variables across risk factor of infant death was showed in Table 1.

Table 1. Distribution of respondents

<table>
<thead>
<tr>
<th>Risks factor</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At risk</td>
<td>42</td>
<td>70</td>
</tr>
<tr>
<td>Not at risk</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>Maternal age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At risk</td>
<td>8</td>
<td>13.3</td>
</tr>
<tr>
<td>Not at risk</td>
<td>52</td>
<td>86.7</td>
</tr>
<tr>
<td>Maternal education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low educated</td>
<td>29</td>
<td>48.3</td>
</tr>
<tr>
<td>Well educated</td>
<td>31</td>
<td>51.7</td>
</tr>
<tr>
<td>Maternal conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At risk</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Not at risk</td>
<td>54</td>
<td>90</td>
</tr>
<tr>
<td>Number of births</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At risk</td>
<td>16</td>
<td>26.6</td>
</tr>
<tr>
<td>Not at risk</td>
<td>44</td>
<td>73.4</td>
</tr>
<tr>
<td>Birth interval</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At risk</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Not at risk</td>
<td>59</td>
<td>98.4</td>
</tr>
<tr>
<td>Economic Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low income</td>
<td>26</td>
<td>43.3</td>
</tr>
<tr>
<td>Middle and high income</td>
<td>34</td>
<td>56.7</td>
</tr>
<tr>
<td>Access to health facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Not available</td>
<td>58</td>
<td>96.7</td>
</tr>
</tbody>
</table>

Table 1 revealed that most of respondents were distributed in category of “not at risk” condition, unless variable of infant condition. About 70% of infant were categorized as “at risk” condition.

Table 2 showed the distribution of respondent base on case and control groups. All cases (30 women) obviously had a baby with poor condition, meanwhile in control group about 38.7% of respondents had a baby with a risky conditions. In this research, the incidence of infant mortality was more prevalent among babies in “at risk” category. Base on chi-square test using the degree of confidence of 95%, revealed that there was a significant association between infant condition and the occurrence of infant mortality ($p=0.0001$).

The term of “at risk” condition of infants referred to condition of low birth weight, preterm birth, asphyxia, sepsis, hypothermic, jaundice or hyperbilirubinemia, post mature and congenital abnormality. In this study, the results were in accordance with another research conducted by Murwati (2015), that babies with low birth weight history more associated with infant mortality ($p=0.000$). It means that the low birth weight has significantly contributed to the incidence of infant mortality.

Table 2. Distribution of respondents across case and control groups

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Group</th>
<th></th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Include infant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At risk</td>
<td>Case</td>
<td>30 (100%)</td>
<td>12 (40%)</td>
</tr>
<tr>
<td>Not at risk</td>
<td>Control</td>
<td>0 (0%)</td>
<td>18 (60%)</td>
</tr>
<tr>
<td>Maternal age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At risk</td>
<td>Case</td>
<td>2 (6.6%)</td>
<td>6 (20%)</td>
</tr>
<tr>
<td>Not at risk</td>
<td>Control</td>
<td>28 (93.4%)</td>
<td>24 (80%)</td>
</tr>
<tr>
<td>Maternal education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low educated</td>
<td>Case</td>
<td>16 (53.3%)</td>
<td>13 (43.3%)</td>
</tr>
<tr>
<td>Well educated</td>
<td>Control</td>
<td>14 (46.7%)</td>
<td>17 (56.7%)</td>
</tr>
<tr>
<td>Maternal conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At risk</td>
<td>Case</td>
<td>1 (3.3%)</td>
<td>5 (16.6%)</td>
</tr>
<tr>
<td>Not at risk</td>
<td>Control</td>
<td>29 (96.7%)</td>
<td>25 (83.4%)</td>
</tr>
<tr>
<td>Number of births</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At risk</td>
<td>Case</td>
<td>7 (23.3%)</td>
<td>9 (30%)</td>
</tr>
<tr>
<td>Not at risk</td>
<td>Control</td>
<td>23 (76.7%)</td>
<td>21 (70%)</td>
</tr>
<tr>
<td>Birth Interval</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At risk</td>
<td>Case</td>
<td>0 (0%)</td>
<td>1 (3.3%)</td>
</tr>
<tr>
<td>Not at risk</td>
<td>Control</td>
<td>30 (100%)</td>
<td>29 (96.7%)</td>
</tr>
<tr>
<td>Economic Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low income</td>
<td>Case</td>
<td>14 (46.6%)</td>
<td>12 (40%)</td>
</tr>
<tr>
<td>Midle and high income</td>
<td>Control</td>
<td>16 (53.4%)</td>
<td>18 (60%)</td>
</tr>
<tr>
<td>Access to health facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available</td>
<td>Case</td>
<td>2 (6.6%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Not available</td>
<td>Control</td>
<td>28 (93.4%)</td>
<td>30 (100%)</td>
</tr>
</tbody>
</table>
Results shows that of the 30 cases there were two respondents (6.6%) who delivered with age at risk, and 6 (20%) of respondents in control group delivered in age at risk for infant mortality. Chi-square test using degree of confidence of 95%, was done to analyze the association between the maternal age and the incident of infant mortality. Based on this test there was no significant association between those two variables (p=0.147). This result similar to the other research conducted by Efendi (2014), it showed the association of maternal age and preterm birth at PHC Hospital Surabaya ($\chi^2=3.099; \ p=0.078$). This result indicated that there was no significant relationship between maternal age and preterm birth (Efendi, 2014).

Bivariate analysis was also carried out to analyze the relationship between the education level of mother and the incidence of infant death. Chi-square test showing that there was no significant relationship between education level of mother and the incidence of infant death (p=0.446). This results in accordance with results of other research conducted by Raharni et al. that showed p-value of 0.392 (Rahani et al., 2011).

Based on Table 2, among 30 women in case group there was only one mother (3.3%) with poor condition, meanwhile among 30 women in control group, there were 5 mothers (16.6%) in category of “at risk” condition. Statistical analysis using chi-square test revealed no significant association between education level of mother and the immunization completeness in previous period (p=0.106). The poor history of previous ante-natal care reflected the poor condition of mother and then increase risk for infant mortality. This results similar with research conducted by Raharni et al. (2011) that no relationship between the condition of mother during pregnancy and the occurrence of infant mortality (p=0.692).

There was also no relationship between each independent variable such as number of birth, birth interval, economic status and the incidence of infant death. All those bivariate test showing p-value more than 0.05 in each test. This result in accordance with other research conducted by Fibriana (2007), it revealed that there was no relationship between number of birth and the occurrence of infant mortality (p=0.553).

The ideal interval of pregnancy with next other pregnancy is about 3 years. This time span is very good for uterus recovery from any inconvenience condition in previous pregnancy. Too short interval of birth is the one of risk for maternal mortality that can be avoided by family planning program using contraceptive aids. Pregnancy interval less than 2 years is also become risk factor for obstetrics complication. This situation might be due to not enough time for the uterus and mothers to recover their healthy intra uterine circumstance and other physical condition (Edyanti & Indrawati, 2014).

According to Raharni et al. (2011) mothers who having interval of pregnancy less than 2 years 10 times more probable to deliver low birth weight babies compared to those who having the interval of pregnancy more than 2 years. In other research, Efendi (2014) showed there was no significant relationship between the interval of birth and occurrence of neonatal death (p=0.181). In our research the economic status of majority of respondent were categorized in above the average.

Table 2 also revealed that occurrence of infant death was higher in case group who did not access the available health facilities compare to the control group. In general, maternal death in the developing countries, pertaining to at least one of three delays (the three delay models) including delayed or late in decision-making to find out health care whenever an obstetric complication was exist. Chi-square test indicated that there was no association between affordability of health services facilities and the completeness of
immunization ($p=0.238$). It was means that access to health facilities did not correlated with incidence of infant mortality.

Besides access to health facilities, access to health information might also influencing health services. Those probable factors finally affect the incidence of infant mortality. Infant mortality should be prevented when all mothers able to access the information and family planning services (Fibriana, 2007).

**CONCLUSION**

Based on the results, it was concluded that there was a significant association between the infant's condition and the incidence of infant mortality in Banjar District, but infant mortality did not associated with maternal age, education level of mothers, maternal conditions number of births, neither interval of birth, and economic status as well as access to health facilities.

**REFERENCES**


PUBLIC OPINION OF SMOKERS AND NON SMOKERS ABOUT NO SMOKING AREA REGULATION IN BLITAR DISTRICT INDONESIA

Sri Widati, Santi Martini, Kurnia D. Artanti, Kusuma S. Lestari, Hario Megatsari

Public Health Faculty of Airlangga University
Email: widatisantoso@gmail.com

ABSTRACT

No Smoking Regulation (KTR) is an attempt to reduce the impact of cigarette used by both active smokers and passive smokers. This study aims to find out the opinions of smokers and nonsmokers about KTR in Blitar District, East Java, Indonesia. This study is a rapid survey using cross sectional design and used a quantitative approach. The survey was conducted in December 2015. The population of this survey was residents of Blitar, aged 18 years and over. The population were 1,200,000 people, scattered in 22 districts. Samples were 1008 persons. The results showed almost all of respondents both smokers and nonsmokers, all of different age groups and all of education levels, all of socioeconomic and all of sub districts agree and endorse the existency of No Smoking Regulations in Blitar District, East Java, Indonesia. The research recommended that Blitar government is sugested to launch No Smoking Regulations in all of Blitar District.

Keywords: No Smoking Regulation, Blitar, Cigarettes

INTRODUCTION

Nowadays, tobacco related diseases become an urgent problem because of universal coverage by government. Universal coverage has to cover the financial budget of tobacco impact. Too many budgets to recover the tobacco related disease. According to the results of various studies, cigarette is one of the addictive substances that can cause harm to the individuals and communities’ health (WHO, 2006). Cigarettes became the biggest cause of death worldwide. In 1950, every year there are about 300,000 deaths due to smoking habits. In the period of 15 to 20 years, it jumped to 1 million deaths in 1965 and 1.5 million in 1975. It means an increase of 3 to 5 times, deaths from smoking. In the 1990s there were 3 million deaths, and more than 65% of the death occurred in developed countries and in developing countries, including Indonesia (Tobacco Atlas, 2012).

In Indonesia, the number of people who smoke is increasing every year. In 1980, about 46.6% of men and 2.4% of women were ever smoked. The data showed that there were 52.9% and 3.6% in 1986. A survey conducted in 1995 showed that smoking behavior was done by 68.8% men and 2.6% women. The number of smokers is increasing every year and the onset of first smoking is also getting younger (TCSC, 2008).

To prevent the various effects of human health, we need to give pictorial health warning about the impact of tobacco in cigarettes advertising and cigarettes packaging (TCSC, 2009). Besides that, it is important to manage production, selling, advertising, promotion and no smoking area regulation (KTR).

KTR is an effort to reduce smoking-related disease, especially for passive smokers. Non-smokers have to endure
disease because of other people’s smoke inhaled around the other. KTR will protect people from the dangers of secondhand smoke, especially for woman and children. Not only smokers who have the right to smoke but also non smoker have right to inhale fresh and healthy air. KTR entitles people to get the air clean and healthy.

Indonesian Government Regulation No. 109 of 2012 on Safety Materials Containing addictive substances form of Tobacco Products for Health at Article 49 states that tobacco products contains addictive things. Therefore, Government shall embody No Smoking area regulation in public area, teaching and learning area, children playground, religious places, public transportation, workplaces, public places and other places.

The purpose of this study is to determine the public opinion about regulation of no smoking area in Blitar, East Java, Indonesia.

**MATERIAL & METHOD**

This study is rapid survey using cross sectional design and used a quantitative approach. Survey was conducted in December 2015. The population of this survey was residents of Blitar, aged 18 years and over. Population are 1,200,000 people, scattered in 22 sub districts. The sample of this survey was 1008 people, aged 18 years and over in all sub districts in Blitar. The sample size was divided by 22 districts in proportion as shown in Table 1.

Data were collected by interviewed with structured questionnaire. Interviews were conducted by enumerators who have been trained in advance (16 persons). Interviews were conducted at selected respondents in each district. The results were analyzed by descriptive method according to variables that have been determined. The result was showed by tables.

### Table 1. The sample at the sub-district of Blitar

<table>
<thead>
<tr>
<th>Sub District</th>
<th>Residents</th>
<th>Sampel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bakung</td>
<td>30,475</td>
<td>24</td>
</tr>
<tr>
<td>Binangun</td>
<td>49,520</td>
<td>39</td>
</tr>
<tr>
<td>Doko</td>
<td>45,609</td>
<td>36</td>
</tr>
<tr>
<td>Gandusari</td>
<td>76,019</td>
<td>60</td>
</tr>
<tr>
<td>Garum</td>
<td>68,300</td>
<td>54</td>
</tr>
<tr>
<td>Kademangan</td>
<td>72,829</td>
<td>57</td>
</tr>
<tr>
<td>Kanigoro</td>
<td>77,370</td>
<td>61</td>
</tr>
<tr>
<td>Kesamben</td>
<td>58,971</td>
<td>46</td>
</tr>
<tr>
<td>Nglegok</td>
<td>76,702</td>
<td>60</td>
</tr>
<tr>
<td>Panggunrejo</td>
<td>45,098</td>
<td>36</td>
</tr>
<tr>
<td>Ponggok</td>
<td>104,083</td>
<td>82</td>
</tr>
<tr>
<td>Sanankulon</td>
<td>57,548</td>
<td>45</td>
</tr>
<tr>
<td>Selopuro</td>
<td>46,971</td>
<td>37</td>
</tr>
<tr>
<td>Selorejo</td>
<td>43,311</td>
<td>34</td>
</tr>
<tr>
<td>Srengat</td>
<td>66,779</td>
<td>53</td>
</tr>
<tr>
<td>Sutojayan</td>
<td>52,191</td>
<td>41</td>
</tr>
<tr>
<td>Talun</td>
<td>66,125</td>
<td>52</td>
</tr>
<tr>
<td>Udanawu</td>
<td>44,003</td>
<td>43</td>
</tr>
<tr>
<td>Wates</td>
<td>34,188</td>
<td>27</td>
</tr>
<tr>
<td>Wlingi</td>
<td>59,141</td>
<td>47</td>
</tr>
<tr>
<td>Wonodadi</td>
<td>51,474</td>
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<td>Wonotitro</td>
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<td>33</td>
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<td>58,971</td>
<td>46</td>
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<td>Nglegok</td>
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<td>Selorejo</td>
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<td>Srengat</td>
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<td>Sutojayan</td>
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<td>Talun</td>
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<td>Wates</td>
<td>34,188</td>
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<tr>
<td>Wlingi</td>
<td>59,141</td>
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</tr>
<tr>
<td>Wonodadi</td>
<td>51,474</td>
<td>41</td>
</tr>
<tr>
<td>Wonotitro</td>
<td>41,479</td>
<td>33</td>
</tr>
<tr>
<td>TOTAL</td>
<td>152,094</td>
<td>1008</td>
</tr>
</tbody>
</table>

**RESULT**

The characteristic of respondents were performed in Table 2.
Table 2. Respondents Distribution based on Age, Gender, Occupation and Education Level in Blitar

<table>
<thead>
<tr>
<th>Respondent’s Characteristic</th>
<th>f</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (year)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 – 25</td>
<td>148</td>
<td>14.68</td>
</tr>
<tr>
<td>26 – 36</td>
<td>241</td>
<td>23.91</td>
</tr>
<tr>
<td>37 – 47</td>
<td>267</td>
<td>26.49</td>
</tr>
<tr>
<td>48 – 58</td>
<td>205</td>
<td>20.34</td>
</tr>
<tr>
<td>&gt;=59</td>
<td>147</td>
<td>14.58</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>480</td>
<td>47.62</td>
</tr>
<tr>
<td>Female</td>
<td>528</td>
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</tr>
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<td><strong>Occupation</strong></td>
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<td>135</td>
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<tr>
<td>Daysman</td>
<td>110</td>
<td>10.91</td>
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<tr>
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<td>13.79</td>
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<td>25.99</td>
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<td>29.46</td>
</tr>
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<td><strong>Level of education</strong></td>
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<td></td>
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</tr>
<tr>
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<tr>
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</tr>
<tr>
<td>University</td>
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<td>13.69</td>
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<tr>
<td><strong>Marriage Status</strong></td>
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<tr>
<td>Not Marriage</td>
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<td>14.7</td>
</tr>
<tr>
<td>Divorce</td>
<td>12</td>
<td>1.2</td>
</tr>
<tr>
<td>Widow</td>
<td>46</td>
<td>4.6</td>
</tr>
</tbody>
</table>

All respondents are in the stages of age who are mature enough to decide and make the best choice for him. The proportion of respondents’ gender relatively balanced between men and women. So this study can be said to be representative for both male and female genders. The distribution of respondents’ occupation split between working in the formal and informal area. Almost 100% respondents have good education at the elementary, junior high school, senior high senior and college. At least, they were able to communicate and able to express his opinions well. Table 1 showed that most of respondents were married. It could be assumed that the respondents were mature enough to have opinion about something.

Respondents who smoke were amount 24.7%. This is similar with data of Basic Health Research (Riskesdas) 2013 which stated that the prevalence of smokers was 30% of the population. Figure 1 showed the prevalence of respondents who smoke and not smoke in Blitar both men and women. This means that both smokers and non-smokers, men and women have a voice in this survey.

![Figure 1. Prevalence of Respondents Who Smoke in Blitar](image-url)

Respondents' knowledge about the impact of smoking has shown good results. About 96.53% of the respondents strongly agree that smoking is harmful to health. Only 3.3% respondents disagreed or did not know the dangers of smoking on health. That is, most people in Blitar already know the dangers of smoking to health. Both smokers and non-smokers respondents agreed that smoking was harmful to health. But smokers still continue to smoke and make danger people around. According to Widati (2006), smoker still smoking because of addiction factors by tar and nicotine in the cigarettes. The addiction make smokers are not able to stop smoking. Their bodies asked for the intake of tar and nicotine.

The implementation no smoking area regulation in Blitar become an urgent matter that must be taken to protect people around smokers. The regulation are entitled to breathe free air and entitled to be free from tobacco related disease. It’s similar with WHO program (2008) to reduce the impact of cigarettes. All respondents aware of the dangers of...
smoking, but they did not know what are the dangers and any disease that can be caused by smoking. Respondents only know that smoking can cause lung cancer and the impact on children's health. However, respondents did not know the other effects such as strokes, heart attacks, impotence, pregnancy and fetal disorders, blood vessel damage, blindness and impotence. Thus, it becomes an urgent need in Blitar District Health Office to disseminate the impact of smoking, especially associated with various diseases throughout the communities of Blitar.

This survey showed that most respondents (84.3%) stated that they ever being exposed by cigarette smoke while in a public place, such as in a restaurant. Only 15.77% of respondents who said never being exposed by cigarette smoke when in public areas. It showed that people who did not smoke are often exposed to other people's smoke. It means people who do not smoke will be exposed by feel secondhand smoke. Everyone should have the right to breathe clean air. Based on these data indicate that the need for regulation on smoke-free area is an urgent matter for the people of Blitar.

Furthermore, respondents in this survey have been exposed by secondhand smoke (passive smoking). This is shown in Figure 1, as many as 91.7% of respondents stated that they were exposed by cigarette smoke or inhale other people's smoke. More than half of the respondents (67.76%) stated that inhale other people's smoke can cause serious health. Only 4.76% of respondents who do not know if inhale other people's smoke can cause health problems. There were 3.47% of respondents stated that exposure to other people's smoke does not cause health problems. This indicates that the level of knowledge about the result of exposure to cigarette smoke of others against health well. Blitar's community knows that inhaling smoke of others who have the same risk with smokers. This data proves that the Blitar District support to regional regulations regarding smokeless cigarette.

Almost 100% of the respondents considered that exposure to secondhand smoke cause health problems. Even smokers themselves assume that cigarette smoke can hit other people and will cause mild, moderate, and seriously health problems. The results also show both smokers and nonsmokers believe that cigarette exposure will give health problems. City Health District Blitar need to reinforce the notion that one hundred percent of the public aware of the cigarette impact and secondhand smoke effect. This effort could be education such as counseling, talk shows, and press conferences.

![Figure 2. Opinion Respondents Regarding Regional Policy about No Smoking Area (KTR) in All Enclosed Public Buildings (Shopping Malls, Restaurants, Supermarkets, Public Transport, Schools, Mosques, Hospitals, Health Centers)](image)

A total of 51.88% respondents strongly agreed if Blitar government implement local regulations about no smoking area (KTR) in buildings. More than one-third of respondents (42.56%) agreed about government’s policies (figure 2). It means the community is very supportive if Blitar have local regulations on no smoking area.
Figure 3. Respondents’ Opinion based on Smoking Habits about The Implementation In A Variety Places or Facilities or Institutions

From Figure 3 can be seen that respondents who smoke also support for KTR in Blitar. A total of 57.05% respondents agreed that KTR regulation implemented in Blitar. Even smokers as much as 36.14% respondents stated strongly agree to the implementation of Regulation KTR in Blitar. Only 9.6% of smokers did not agree about the implementation of KTR Regulation in Blitar. Most respondents both smokers and nonsmokers agreed if the office area into KTR area. This area should be one of the areas listed in Local KTR. Respondents who smokers usually smoked after meals and feel bad eating when not covered with smoke. About 69.9% od respondents agree if restaurant became a KTR area. Moreover, almost 100% of non-smokers respondents support for KTR in the restaurant area. Based on the data, so Local Health District Blitar have to implement KTR regulation in restaurant area.

Almost all of respondent smokers and nonsmokers support KTR regulations in the area of health facilities. Health facilities are already supposed to be an example for other areas in terms of improving health, including about cigarettes impact.

More than 75% of respondents are both smokers and nonsmokers support KTR regulation in public places such as malls, bus stops, stations, terminals, markets, parks and other public places. They want this area has been an area free from cigarette smoke. Thus public places should be included in KTR regulation.

The results also showed that almost 100% of respondents supported the regulation of KTR in educational institutions. Educational institution such as both formal and non-formal early childhood, kindergarten, elementary, junior high school, senior high school, college, a course, a tutoring and other educational institutions. Educational institutions are considered as institutions that educate and be role models for the younger generation. Therefore, applying KTR in educational institutions urged to do. Almost 100% of respondents consider the place of worship (religion places) is an area that should apply KTR. Even smokers (94.4%) but they state that they agree and strongly agree if the place of worship is KTR area. So KTR regulation should include a place of worship/religion.

Most people do not want to remind smokers who smoke in public transport because of shame or fear. They afraid to remind the others, because of there is no KTR regulation to protect them. Majority smokers (90.4%) support KTR Regulation in public transportation. KTR regulation in public transport will become legal protection for community in public transport. Respondents in all districts agreed if KTR Regulation has been implemented in all of Blitar region. Only view respondents that states do not agree or do not know. Almost all respondents in all districts in Blitar agree if KTR regulation had been implemented in the office area.

Almost 100% of all age groups (93.2%) support KTR regulation in Blitar. This could strengthen the assumption that almost all people in the age group Blitar support their regional KTR regulation.
Figure 4. Men and women support to KTR Regulation Implementation

Only 1.1% men and women do not agree to KTR Regulation in Blitar. It means almost all of respondents in Blitar agree to KTR Regulation in Blitar.

Figure 5. Support for legislation KTR By Marital Status

Respondents both married and unmarried almost all of them support the local regulations KTR in Blitar. More than 94% of respondents of various types of work agree with KTR. Only 5.6% of respondents disagreed or did not know.

It can be concluded that almost all respondents from different age groups, different jobs, different districts, both men and women supporting KTR regulation and the implementation in Blitar. They also believe that KTR regulation aimed to protect community health. Respondent who smoked or not smoked, believe that the regulation will protect people from adverse effect of smoking. It means that nearly all of respondents believe that KTR is intended to favor and protection of the public to stay healthy and also improve healthy living community in general.

CONCLUSION

Most of respondents have a good education level and good socioeconomic levels. Respondents’ job is in the private sector. Respondents who smoked amounted to nearly one-third (24.7%) of the total respondents. Amount 96.7% of knowledge respondents about the tobacco impact is good. Respondents only knew smoking can cause lung cancer and child health impact. Respondents do not know any other kind of pain caused by cigarette smoke such as stroke, heart attacks, impotence, fetal disorders, blood vessel damage and blindness.

Almost all of respondents had been exposed to smoke in public places and respondents said that they feel disturbed by it. Respondents also stated that they could not comfortably enjoy the facilities in public places because of exposure to cigarette smoke. Almost all respondents both smokers and nonsmokers, of different age groups and levels of education, and socioeconomic and from all districts agree or endorse the implementation of Regional No Smoking Area Regulations in Blitar. Almost all of respondents agree to the implementation of KTR regulation in all enclosed buildings (malls, supermarkets, restaurants, offices, clinics or health centers or hospitals, public transport, bus or public transportation terminals, educational institutions, places of worship and public transport).

The recommendations are Local Health District Blitar launch and implement the No Smoking Area Regulation in all of Blitar District.

REFERENCES


THE ROLE OF NURSE IN TREATING MENTAL DISORDERS PATIENTS WITH SCABIES IN SOCIAL REHABILITATION OF POST PSYCHOTIC PATIENTS

Bayu Dri Wicaksono, Byba Melda Suhita
Surya Mitra Husada Health College Kediri
Jl. Manila 37 Sumbercece Kediri
Email: bybamelda@yahoo.com

ABSTRACT

The role of the nurse is all the authority possessed by the nurse to perform the duties and functions under their competence. A limited number of nurses lead them overwhelmed in dealing with patient loads. The purpose of this study is to explore the role of nurse in treating psyche disorders patients with scabies in Social Rehabilitation of post psychotic patients in Kediri, East Java. This is a qualitative research using phenomenological approach in interpretive method. All nurses (four persons) in Social Rehabilitation of Post Psychotic Patients Kediri are became informants in this study. In-depth interview was conducted in data collecting by using semi-structured interviews. Data was analyzed using inductive thinking process. Results revealed that there were seven themes of data, namely: 1) lack of self-care, 2) an assessment is not carried out, 3) determining the diagnosis is not done, 4) collaborative intervention, 5) education action of nurses, 6) the evaluation of the actions, and 7) the documentation only limited of drug administration. It was concluded that the role of nurse in caring self-care deficit among patients by giving education action of nurses. The determination of the diagnosis was not carried out because limited number of nurses, while collaborative interventions conducted by nurses also only limited in drug administration under supervised of medical doctor or physician. Base on evaluation it was identified that the main nursing activity was carried out the social rehabilitation. Nursing documentation of patients should be done this service place because of the limited medical doctors, it caused nursing care performance could not be well documented. Therefore, Social Rehabilitation of Post Psychotic Patients in Kediri had limited documentation of drug administration.

Keywords: Role of Nurse, Mental Disorder, Scabies

INTRODUCTION

Multi-dimensional crisis has resulted in severe stress in most people of the world, including Indonesia. The economic and political crisis, social, culture, religion, race, creed and so on, it not only cause potential risk for physical disorders such as malnutrition, developing a variety of infectious diseases among people in the community, but also cause potential risk for severe psychiatric illnesses including stress, depression, schizophrenia and several social and spiritual problems. People with mental illness generally failed to react to adaptation mechanisms of the mental functions toward the external stimulus and tensions, which is arise malfunction or disruption of the structure of organ, or mental psychiatric system (Erlinafsiah, 2010). The tendency of increasing numbers of mental or psychological disorders among people in recent and future will continue to be a problem and a challenge for health workers in particular psychology and nursing professions (Erlinafsiah, 2010).
Based on data from the World Health Organization (WHO) in Joseph (2013), there are approximately 450 million people worldwide who experience mental illness. In year 2006, Indonesia has an estimation of 26 million people are mentally handicapped with a population ratio of 1:4 inhabitants. Ministry of Health (2006) recognized and estimated 2.5 million people in this country have mental disorder. Base on Primary Health Research year 2013, number of people with mental disorders reached about 1.7 million (Ministry of Health, 2013).

Mental disorders could not be recovered optimally as initial condition prior to the illness. Some patients may leave residual symptoms such as an inability to communicate and to adopt the reality, as well as childish behavior that impact on their productivity. In year 2001, World Bank support recovering mental disorder in several countries indicating that Disability Adjusted Life Years (DALY’s) 8.1% of the Global Burden of Disease, caused by mental health problems.

The emergence of mental disorders in the psychiatric system has caused in deterioration in the patient's behavior which led to a lack of concern for self-care. In the life of a day of cleanliness is very important and must be considered as hygiene affects the health and psychological person (Handoko, 2007). The big impact was occured when less attention about hygiene practices will cause a type of skin disease such as scabies. Pawening (2009) states that humans are infected by the Sarcoptes scabies mite regardless of age, race or gender and knowledge, no social or economic status, but poor personal hygiene may increase skin infection. Transmission occurs by direct and indirect contact. The direct contact, for example in contact with people or indirectly, for example through towels and clothing. According to Sungkar (2006), the incidence of scabies disease worldwide is fluctuate due to the influence of immune factor which could not be completely understand.

In the above circumstances the nurses themselves have a very important role in the rehabilitation both in the preparation, implementation, and monitoring of patient. In this condition, nurses have a role as an attitude therapist, i.e. to observed changes, either small changes or settling the patients, demonstrate acceptance, respect, understanding the patients and support patient’s interest to promote and participate to interacts with other people (Kusumawati, 2010). The purpose of this study was to explore the role of nurses in caring for mental disorders people with scabies in the Rehabilitation Unit of Post Psychotic patients in Kediri, East Java.

MATERIAL & METHOD

This is a qualitative research using phenomenological approach in interpretive method. All nurses (four persons) in Social Rehabilitation of Post Psychotic Patients Kediri are became informants in this study. In-depth interview conducted in data collecting by using semi-structured interviews. Data was analyzed using inductive thinking process.

RESULT

Table 1 shows the characteristic of informants in this study, including age and duration of work at the Social Rehabilitation Unit of Post Psychotic Patients in Kediri, East Java.

Table 1. Characteristic of The Informants

<table>
<thead>
<tr>
<th>Informants</th>
<th>Age (years)</th>
<th>Duration of work (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informant 1</td>
<td>35</td>
<td>6</td>
</tr>
<tr>
<td>Informant 2</td>
<td>32</td>
<td>2</td>
</tr>
<tr>
<td>Informant 3</td>
<td>32</td>
<td>7</td>
</tr>
<tr>
<td>Informant 4</td>
<td>29</td>
<td>6</td>
</tr>
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</table>
The range of age distribution among the informants are 29 until 35 years old. The longer duration of works is 7 years.

DISCUSSION

Self-care Deficit

Most psychiatric patients usually lack of self-care. The term of self-care practices are activities to fulfill personal hygiene, including bathing, cutting the nails, clothing, toileting and meals. In this situation, a nurse has an obligation to help the patients in order to fulfill those basic needs by bathing the patients, helping to cut the nails, helping to cut hair, giving a cloth, supporting the patients for toileting correctly, monitoring patients for toileting, and monitoring patients at mealtimes. Nurses help patients to take a bath, and assist them holding a hose to drain water, advising the patient and ensure their body clean by using soap simultaneously during bathing.

During cutting the nails, for patients who could do it, they did it by themselves, but for patients who could not do this activity, they will be helped by other friends who could cut their own nails. In this situation nurses also helped patients who could not cut their own nails. Clothes for patients from rehabilitation center that usually used and shared among patients were provided on the chairs near bathroom. They change the clothes after taking bath in the morning or afternoon by themselves or were directed by a nurse. Nurse looked after patients with mental disorders because they did not have awareness in personal hygiene. Scabies or other skin infection might occur among this patients. According to Orem (1971) in Kozier (2010), self-care deficit occurs when an action of self-care is inadequate to meet their needs of self-care.

It was confirmed by Fitria (2009) who states that lack of self-care is a condition in which a person who had impaired ability to perform basic self-care (activities of daily living) in the areas of feeding, bathing or hygiene, dressing or grooming, and toileting. Base on this condition, nurses should take an important role in action plan development to assist patients to meet their deficit in self-caring such as bathing activity, dressing activities, dining activities, as well as self-care deficit elimination (Nanda & NIC NOC, 2015).

Unconducted Assessment

Unconducted assessment is part of rehabilitation assessment. Re-assessment did not conducted due to insufficient of patient-nurse ratio, and also due to unavailable of nursing care file documents in each unit. Meanwhile, assessment should be carried out for every patient. According to Carpenito & Moyet (2007), assessment is the stage of a systematic data collection on individuals, families, and groups including the collection of data, the orientation of the data, data validation, data analysis. The assessment should be carried out by nurses. In situation in which the ratio of patients to nurses is insufficient, the assessment cannot be conducted by a nurse at a rehabilitation center.

Unconducted Diagnosis Determination

Nurses did not conduct the diagnosis determination, might due to insufficient ratio of nurses to patients and did not have a file of documentation of nursing care every single patient in each unit. Actually the determination of diagnosis must be carried out on each patient individually to find out a nursing problems. According to Perry & Potter (2005) the nursing diagnosis is determining the nature and the broad spectrum of nursing problems exhibited by patients individually or families who receive nursing care. It suppose to be Perry & Potter (2005) said that in this case the nurse must determined the nursing diagnosis. To support the diagnose, nurses should able to collect a valid data and then analyzed into groups, distinguishing collaborative nursing
diagnosis and formulate the priority. In this study, the determination of the diagnosis did not conducted by nurses at a rehabilitation center.

**Collaborative intervention**

The nursing interventions is classified into two categories. The Classification includes the interventions that nurses do on behalf of patients, both independent and collaborative interventions, both direct and indirect care. An intervention is defined as any treatment, based upon clinical judgment and knowledge, that a nurse performs to enhance patient/client outcomes.

Collaborative interventions conducted by nurses including giving an advice come from the doctor such as giving medication. In this position, a nurse give a social rehabilitation, which not activities in hospitals. This the collaborative action, the important resposibility of nurses is giving medication under supervised by tutors in distributing the drug. Meanwhile, according to Bulechek & McCloskey (1994) collaborative intervention is a therapy that requires knowledge, skill, and expertise of a wide range of health care professionals. The intervention of nurses, doctors and nursing collaboration requires critical assessment and decision-making.

The collaborative action of nurses is any action to overcome the problems in collaborative teamwork with other team. In this condition the nurses perform collaborative actions not only giving the drug, but also consultation to other professions such as doctor. Nurses were suppose to be more cooperative in providing collaborative actions along with other medical teams.

**Education Actions of Nurse**

The education action of nurses for patients including education about personal hygiene such as persuide patients to take a bath properly in order to getting a clean body completely. Nurses responsible to find out the patients who would not aware to take a bath together with other patients. Keeping personal hygiene is very important for people with mental disorders with scabies infection. The role of nurses were to educate about the importance of personal hygiene. Therefore, people with mental disorders can avoid the problems of skin diseases such as scabies.

According to Handoko (2007) personal hygiene is very important and must be considered in daily living. Personal hygiene may affect the health status and psychological condition of people. Meanwhile the education is a series of efforts carried out by nurses intended to influence others, ranging from individuals, groups, families and communities for the implementation of healthy behavior.

**Evaluation of the Action**

Nurses carried out an evaluation by doing the social rehabilitation to patients. Patients were evaluated by checked whether patients already able to do the daily activities in rehabilitation center. If so, patients can be return back to their family. According to Potter & Perry (2005), evaluation is an assessment or a judgement about a series of of information for specific purposes. During evaluation, nurses should carry out all components of evaluation such as collecting the related data and information, in order to make a conclusion whether the goal had been achieved.

Nurse and the client plays an active role comparing the patients response with the expected results, connecting the activities with results, described the the problems using assessment of goals achievement, and evaluate whether nursing plan quite effective to solve the problems. After that, make a conclusion base on patient's problem. In this case, evaluation was conducted by nurse when the patients has a good progress in performing daily activities in rehabilitation center. If patient do their daily activities well, then patients allowed to getting home.
Documentation Limited on Drug Delivery

The file documentation carried by nurses was only limited on medication recommended by doctors. Nurses distributed drug after meal, assisted by counselors. Actually, nursing care documentation is a document or recording all caring process including the process of assessment, diagnosis, action plans, nursing actions and the evaluation of the patient's condition, not only on degree of severity of illness but also about type services, as well as quality and quantity of services provided by nurses to fulfill patients needs (Ali, 2010). In this study, documentation of nursing care for each patient had not been carried out. This condition was due to only limited staff available in this rehabilitation center.

The Linkages among Themes

The role of nurses in the care of people with mental disorders with scabies including all the authority of the nurse to conduct the task and functions according to their competence to care people with mental disorders. The first competence is helping and solving a deficit of self-care to patients by giving education action. Unfortunately, in this study, this activity was not conducted neither to the determination of the diagnosis. This condition was caused by the nurses had over loads of works due to only limited number in this rehabilitation center.

Collaborative intervention was also unconducted because there were limited administration of drug as directed by your doctor. This condition lead to limitation of evaluation action only carried out as a social rehabilitation. This evaluation was carried out if the patient capable to do their daily activities. Nursing documentation should be carried out to each patient individually. Because of the limitations of medical personnel the nursing care documentation cannot be performed, therefore there were only limited documentation of drug administration was conducted at Social Rehabilitation Unit of Post Psychotic Patients in Kediri East Java.

CONCLUSIONS

This research can be concluded as follow: 1) the study produced seven themes, namely self-care deficit, unconducted assessment, unconducted diagnosis determination, collaborative intervention, education action of nurses, evaluation of the actions, and limited documentation of drug administration; 2) the theme of self-care deficit conducted in patients was personal hygiene fulfillment including bathing patient, assisting patient to cut the nails, helping to cut hair, clothing patients, unless patient who carrying their own clothes, educate and monitoring patients for correct toileting, as well as mealtimes supervising; 3) themes of unconducted assessment an assessment in patients who entered rehabilitation center, it did not well reviewed; 4) the theme of unconducted diagnosis determination revealed that the determination of diagnosis is not carry out by nurses due to the ratio of nurses to patients was insufficient; 5) collaborative intervention conducted by nurses including doing the doctor's advice, giving medication to patients, consulting problems to doctor; 6) caring education for patients conducted by nurses including conducting social rehabilitation for patients, when the patients had a good progress they will be allowed to getting home; and 8) the theme of documentation was only limited on drug administration that nurses made a simply documentation the drugs recommended by doctors.

REFERENCES


DENGUE, PUBLIC HEALTH AND HUMAN SECURITY

Oedojo Soedirham

Department of Health Promotion and Behaviour Science
Faculty of Public Health, Universitas Airlangga
Kampus C Mulyorejo Surabaya - 60115
Email: oedojo@yahoo.com

ABSTRACT

Since the first time found in 1968, Dengue infection in Indonesia became a major public health problem for almost in the last 50 years. The density and mobility of the residence, and poor sanitation are presumed to be the factors of the spread of the disease. The main purpose of the paper is to review critically and to prove that the Disease as health problem as well as an issue of human security. At first, the paper will present the concept of human security and health security. Using Dengue viral infection as the problem, then, the paper will discuss the spread of the disease in the context human security such as the spread of the disease is the evidence that there is a lack to guarantee a minimum protection from diseases and unhealthy lifestyles. The spread of the disease is also the evidence that there is inequality in health and poor means of improving the health of the least healthy of the population. Inequalities in health are rooted in inequities in access to basic prerequisites for health. The final part of the paper will be the conclusion.

Key words: Dengue viral infection, Indonesia, health security, human security.

INTRODUCTION

Dengue as Global Threat

Torres and Castro (2007) stated that during the last two decades, all countries in the tropical regions of Central and South America, as well as most of the Caribbean, have experienced a marked increase in the incidence of both classic dengue and, for the first time, dengue hemorrhagic fever (DHF). The first large epidemic of DHF in the region occurred in Cuba in 1981, with 24,000 cases of DHF and 10,000 cases of dengue shock syndrome (DSS) and 158 deaths reported during a 3-month period.

In 1986 and 1987 massive dengue outbreaks were reported in Brazil. In 1990 nearly one-fourth of the 300,000 inhabitants of Iquitos, Peru, acquired dengue fever, and in the same year 3,108 cases of DHF with 78 deaths were reported in Venezuela. Clark et al. (2005) found that in Southeast Asia Dengue fever/dengue hemorrhagic fever (DF/DHF) constitutes one of the leading causes of hospitalization of children. In Thailand, dengue poses a substantial health burden on both the health care system and individual households.

The situation in Indonesia is no different (WHO, 2012). Further, the reference stated that the Indonesian archipelago consists of 17,508 islands with 33 provinces and 447 districts or municipalities. The estimated population in 2011 was 237.6 million. Dengue was first reported in Indonesia in 1968 (Jakarta and Surabaya) with very high case fatality rate (CFR) of >41.3% (58 cases with 24 deaths). The first dengue epidemic outside of Java occurred in 1972 in Sumatra (West Sumatra and Lampung), in 1973 on Sulawesi (North Sulawesi) and
Bali, and in 1974 on Kalimantan (South Kalimantan) and Nusa Tenggara; dengue has affected all provinces in Indonesia since 1997. In 2011, there were 58 065 cases with 504 deaths.

The morbidity (incidence) rate is 24.44/100 000 population (CFR 0.87%). The five provinces with the highest morbidity rate are Bali (81.08), DKI Jakarta (78.19), Aceh (53.66), Riau Islands (49.70) and Central Sulawesi (47.27). However, the highest CFR was reported in Gorontalo (4.55), Banten (2.70), East Nusa Tenggara (2.41), South Kalimantan (2.35) and Riau (2.28). The CFR was static during 2010 (0.87%) and 2011; however, the incidence rate has reduced significantly from 65.57 (2010) to 24.44 (2011). Most dengue cases are in people aged >15 years (55.1%); however, most deaths were among the age groups 10–14 years (26.1%) and >15 years (26.1%).

The aim of the paper is mainly to review critically some references about Dengue viral infection from all over the world. The disease is an old disease but it still gives serious problem to mankind. The spread of the disease is also evidence that there is inequality in health facilities access and poor means of improving the health of the least healthy of the population. Inequalities in health are rooted in inequities in access to basic prerequisites for health. At the end the paper will relate between the endemic of Dengue as public health problem that threatened human security.

If we look at the history of human civilization, including health conditions that afflict them from time to time it will be seen that human history is replete with stories of epidemic infections. These epidemics tend to follow a cyclical pattern, since they often produce immunity in survivors, and the microbes must await a new generation of hosts to infect. Alternatively, the disease-causing microbes migrate to geographically distant and immunologically vulnerable populations, producing a pandemic, or global outbreak (Peterson, 2002).

Dengue viral infection is an example that seemingly follows the pattern. Dengue fever (DF) is an old disease that became distributed worldwide in the tropics during the 18th and 19th centuries when the shipping industry and commerce were expanding. Both the principal mosquito vector, Aedes aegypti, and the viruses responsible for DF were spread via sailing ships because the mosquito used the stored water on the ships as a breeding site and could maintain the transmission cycle, even on long voyages. When such a ship called at a port, often both the mosquito and the virus were introduced (Gubler, 2002).

The first reported epidemics of dengue fever occurred in 1779-1780 in Asia, Africa, and North America; the near simultaneous occurrence of outbreaks on three continents indicates that these viruses and their mosquito vector have had a worldwide distribution in the tropics for more than 200 years. During most of this time, dengue fever was considered a benign, nonfatal disease of visitors to the tropics. Generally, there were long intervals (10-40 years) between major epidemics, mainly because the viruses and their mosquito vector could only be transported between population centers by sailing vessels (Gubler & Clark, 1995)

Dengue, including dengue fever and dengue haemorrhagic fever, is the most rapidly spreading mosquito-borne viral disease and an increasing public health problem globally. During the past 50 years, the incidence of dengue has increased by 30 folds, parallel with the increasing geographic expansion from urban to rural areas. According to current estimates, at least 100 countries are endemic of dengue and about 2.5 billion people are at risk in tropical and subtropical regions, with about 50 million dengue infections occurring annually. The revised International Health Regulations 2005 included dengue as a disease that
may constitute a public health emergency of international concern with implications for health security due to disruption and rapid epidemic spread beyond national borders (Huy et al., 2009; Pham et al., 2011; Suaya et al., 2009).

Dengue as Public Health Problem: Political, Social, and Economic Context

The essence of public health, in the eyes of most researchers and practitioners, is a struggle to understand the causes and consequences of death, disease, and disability. Often an even greater struggle emerges when policy makers attempt to put that understanding to work, to translate knowledge into action for our collective well-being. Science can identify solutions to pressing public health problems, but only politics can turn most of those solutions into reality (Carr et al., 2007; Oliver, 2006).

Politics, for better or worse, plays a critical role in health affairs. Politics is central in determining how citizens and policy makers recognize and define problems with existing social conditions and policies, in facilitating certain kinds of public health interventions but not others, and in generating a variety of challenges in policy implementation. It is essential that public health professionals understand the political dimensions of problems and proposed solutions, whether they hold positions in government, advocacy groups, research organizations, or the health care industry. This understanding can help leaders to better anticipate both short-term constraints and long-term opportunities for change (Oliver, 2006).

Public health commonly involves governmental action to produce outcomes—inequality and disease prevention or health promotion—that individuals are unlikely or unable to produce by themselves. Although this perspective is deeply ingrained in most public health students, researchers, and practitioners, it runs counter to a fundamental emphasis on property rights, economic individualism, and competition such as in American political culture. The exceptionalism of the United States lies in its antistatist beliefs: Americans are less concerned with what government will do to benefit individuals than what government might do to control them. To the extent that Americans support collective action in the pursuit of public health or any other social good, they exhibit a strong preference for voluntary organization and participation (Oliver, 2006).

Further Oliver (2006) said that there are many reasons why the health of individuals and the general public is a political issue, not merely a private matter. First, individual and institutional actions often produce significant spillover effects—what economists call externalities—some of which are beneficial and some of which are harmful. To compensate for externalities associated with private actions such as smoking, vaccination, driving while intoxicated, sexual practices, and the manufacture and sale of products requires political decisions about when and how to impose restraints on individual liberties or commercial interests.

In the eyes of John Stuart Mill, this would be the sole principle justifying public health policy: “The only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others. His own good, either physical or moral, is not sufficient warrant”. A prominent expression came a century ago in the landmark Supreme Court case of Jacobson v. Massachusetts, validating the city of Cambridge’s program of compulsory vaccination against smallpox.

Second, citizens look to government to identify and satisfy a variety of physical, economic, and psychological needs that extend well beyond the means for survival. The public may support certain “merit goods” that should be distributed to intended beneficiaries.
whether or not they have an ability to pay for those goods. Such merit goods include elementary and secondary education, medical care for the poor and elderly, and food assistance and require political decisions to define their scope and substance, eligibility to receive them, and the source of revenues to purchase them or provide them directly.

Third, protecting public health involves moral judgments that acquire legitimacy through political debate and resolution. Kersh and Morone as quoted by Oliver (2006) argue, “Despite myths about individualism and self-reliance, the U.S. government has a long tradition of regulating ostensibly private behavior”. The appropriateness of offering clean needles to injection drug users, funding stem cell research, supporting medical uses for marijuana, ensuring access to contraception and abortion, and legalizing physician-assisted suicide are among the moral issues that are hotly contested in the political arena.

Fourth, a healthy population and workforce is vital to economic growth and social order. Threats from such infectious disease Dengue, AIDS or bioterrorism are not only public health problems but also, when they reach a certain scale, may become national security issues and thus a potential source of political instability. These justifications for public action have produced a body of law and a politics of health that must balance “... the legal powers and duties of the state to assure the conditions for people to be healthy, and the limitations on the power of the state to constrain the autonomy, privacy, liberty, proprietary, or other legally protected interests of individuals for the protection or promotion of community health”.

Dengue fever, a viral infection transmitted by the *Aedes aegypti* mosquito, is a rapidly growing public health problem in tropical and sub-tropical countries. A large share of the world population is at risk, as over 2.5 billion people live in affected areas, and an additional 120 million people travel to affected areas annually. The annual number of dengue infections is estimated at 50 to 100 million (Suaya *et al.*, 2009). Cost of illness studies quantify the economic value of resources lost because of disease or consumed in its prevention, treatment, and care. Endemic and epidemic dengue imposes economic and social stress on health care systems, affected households, and society at large. (Carrasco, *et al.* 2011; Huy, *et al.*, 2009; Suaya, *et al.*, 2009; Wettstein, *et al*, 2012).

**Human Security**

What is human security? Human security is a relatively new concept, but one that is now widely used to describe the complex of interrelated threats associated with civil war, genocide and the displacement of populations. The distinction between human security and national security is an important one. While national security focuses on the defense of the state from external attack, human security is about protecting individuals and communities from any form of political violence. Human security and national security should be — and often are -- mutually reinforcing. But secure states do not automatically mean secure peoples.

Protecting citizens from foreign attack may be a necessary condition for the security of individuals, but it is not a sufficient one. Indeed, during the last 100 years far more people have been killed by their own governments than by foreign armies. All proponents of human security agree that its primary goal is the protection of individuals. But consensus breaks down over what threats individuals should be protected from. Proponents of the ‘narrow’ concept of human security, which underpins the Human Security Report, focus on violent threats to individuals, while recognizing that these threats are strongly associated with poverty, lack of state capacity and various
forms of socio-economic and political inequity.

Proponents of the ‘broad’ concept of human security articulated in the UN Development Programme’s 1994, Human Development Report, and the Commission on Human Security’s 2003 report, Human Security Now, argue that the threat agenda should be broadened to include hunger, disease and natural disasters because these kill far more people than war, genocide and terrorism combined. Although they are still subject to lively debate within the research community, the two approaches to human security are complementary rather than contradictory (The Human Security Report, 2005).

The concept grew out of a post-Cold War multi-disciplinary approach involving a number of research fields, including development studies, international relations, strategic studies, and human rights. While traditionalists focus on the defense of the nation state, the individual is the unit of analysis in the study of human security. It is now often taught in universities as part of international relations, globalization, or human rights studies. Meanwhile, the United Nations Development Programme’s 1994 Human Development Report is considered a milestone publication in the field of human security. The report states that human security rests on two pillars, freedom from want and freedom from fear, while threats to human security are divided into seven categories: economic, food, health, environmental, personal, community, and political security.

Critics of the concept argue that the term is essentially meaningless; that it has become little more than a vehicle for activists wishing to promote certain causes; and that it does not help the research community understand what security means or help decision makers to formulate good policies.

The development of the concept of human security

The end of the Cold War is often seen as the moment where human security gained real recognition because of the belief that, with the relaxation of ideological hostilities between the US and USSR in the early 1990s, real progress could be made to address the root causes of global insecurity. Increasing levels of global interdependence further solidified the growing consensus that today’s security threats go beyond our traditional understanding of defense threats, (e.g. attack from another state) to include poverty, economic inequality, diseases, human rights abuses, environmental pollution, and natural disasters. Those who argue for the adoption of a human security agenda believe that if our security apparatuses focused more on protecting individual citizens and groups from threats that may endanger their basic survival, rather than simply on perceived threats to the nation state, the world would be a more secure place.

Using the UNDP’s 1994 Human Development Report’s definition of human security, the scope of global security should be expanded to include threats in seven areas:

1) Economic security -- Economic security requires an assured basic income for individuals—usually from productive and remunerative work or, as a last resort, from a publicly financed safety net. In this sense, only about a quarter of the world’s people are presently economically secure. While the economic security problem may be more serious in developing countries, concern also arises in developed countries such as the United States. In the past two decades, the number of jobs in industrial countries increased at only half the rate of GDP growth and failed to keep pace with the growth in labor force. In both the United States and the European countries, nearly 15% of the population
lives below the poverty line. In developing countries, for youth in Africa in 1980s for example, the open unemployment rate is above 20%. The unemployment problem constitutes an important factor underlying political tensions and ethnic violence.

2) Food security -- Food security requires that all people at all times have both physical and economic access to basic food. According to the United Nations, the overall availability of food is not a problem, rather the problem often is the poor distribution of food and a lack of purchasing power. In the past, food security problems have been dealt with at both national and global levels. However, their impacts are limited. According to UN, the key is to tackle the problems relating to access to assets, work and assured income (related to economic security).

3) Health security -- Health security aims to guarantee a minimum protection from diseases and unhealthy lifestyles. In developing countries, the major causes of death are infections and parasitic diseases, which kill 17 million people annually. Most of these deaths are linked to poor nutrition and unsafe environment, particularly polluted water. In industrial countries, the major killers are diseases of the circulatory system, causing 5.5 million deaths in a year. According to the UN, in both developing and industrial countries, the threats to health security are usually greater for poor people in rural areas and particularly children. The situation for women is particularly difficult. One of the most serious hazards they face is childbirth: more than three million women die each year from causes related to childbirth.

4) Environmental security -- Environmental security aims to protect people from the short- and long-term ravages of nature, man-made threats in nature, and deterioration of the natural environment. In developing countries, one of the greatest environmental threats is that to water. Water scarcity is increasingly becoming a factor in ethnic strife and political tension. Water pollution also leads to the lack of safe sanitation in developing countries. In industrial countries, one of the major threats is air pollution. Pollutants emitted by vehicles, factories and power plants are harmful to health. In Los Angeles, for example, 3,400 tons of pollutants are produced each year. Global warming, caused by the emission of greenhouse, is another environmental security issue.

5) Personal security -- Personal security aims to protect people from physical violence, whether from the state or external states, from violent individuals and sub-state actors, from domestic abuse, and from predatory adults. For many people, the greatest source of anxiety is crime, particularly violent crime. Industrial and traffic accidents are also great risks. In industrial countries, traffic accidents are the leading cause of death for people aged 15-30. Violence in the workplace has also increased. In 1992, more than two million U.S. workers were physically attacked at their workplace. Children are also the victims of violence. Nearly 7,000 U.S. children died from gunshot wounds in 1992.

6) Community security -- Community security aims to protect people from the loss of traditional relationship and values and from sectarian and ethnic violence. Traditional communities, particularly ethnic groups, come under much more direct attack from each other. About half of the world’s states have experienced some inter-ethnic strife. The United Nations declared 1993 the Year of Indigenous People to highlight the continuing vulnerability of the 300 million aboriginal people in 70 countries as they face a widening spiral of violence.
7) Political security -- Political security is concerned with whether people live in a society that honors their basic human rights. According to a survey by Amnesty International, political repression, systematic torture, ill treatment or disappearance was still practiced in 110 countries. Human rights violations are most frequent during periods of political unrest. Along with repressing individuals and groups, governments may try to exercise control over ideas and information.

In an ideal world, each of the UNDP's seven categories of threats would receive adequate global attention and resources. Yet attempts to operationalize this human security agenda have led to the emergence of two major schools of thought on how to best implement the Human Security concept -- "Freedom from Fear" and "Freedom from Want". While both the freedom from fear and freedom from want schools agree that the individual should be the primary referent of security, divisions emerge over the proper scope of that protection (e.g. over what threats individuals should be protected from) and over the appropriate mechanisms for responding to these threats.

1) Freedom from Fear-- This school seeks to limit the practice of Human Security to protecting individuals from violent conflicts. This approach argues that limiting the focus to violence is a realistic and manageable approach towards Human Security. This approach is also called "Humanitarian" or "Safety of Peoples" approach. Emergency assistance, conflict prevention and resolution, peace-building are the main concerns of this approach. Canada, for example, was a critical player in the efforts to ban landmines and has incorporated the "Freedom from Fear" agenda as a primary component in its own foreign policy.

2) Freedom from Want-- According to UNDP 1994, "Freedom from Want" school focuses on the basic idea that violence, poverty, inequality, diseases, and environmental degradation are inseparable concepts in addressing the root of human insecurity. Different from "Freedom from Fear", it expands the focus beyond violence with emphasis on development and security goals. Japan, for example, has adopted the broader "Freedom from Want" perspective in its own foreign policy and in 1999 established a UN trust fund for the promotion of Human Security.

Health security

The World Health Organization (WHO) emphasizes health as an indispensable component of development policies, advocating the concept of 'health security' whereby each individual is entitled to maintain, protect and promote their own health. Health security aims to help vulnerable groups in society, such as unemployed young people at risk of drug addiction and prostitution and civilians in armed conflicts. In the latter case, WHO has advocated 'health as a bridge to peace' which would promote dialogue between factions in a civil war and protect civilians by recognizing hospitals and clinics as 'peace zones' and urging conflicting forces to observe ceasefires for the immunization of children against vaccine-preventable diseases, etc. In this sense, health security is based not only on the priority of public health for development and progress, which is essential for freedom from want, but also functions as a catalyst for promoting freedom from fear (Lee, 2004).

Dengue in Indonesia: Political, Social, and Economic Context

The Indonesian archipelago consists of 17,508 islands with 33 provinces and 447 districts or municipalities. The
estimated population in 2011 was 237.6 million. Dengue was first reported in Indonesia in 1968 (Jakarta and Surabaya) with very high case fatality rate (CFR) of >41.3% (58 cases with 24 deaths). The first dengue epidemic outside of Java occurred in 1972 in Sumatra (West Sumatra and Lampung), in 1973 on Sulawesi (North Sulawesi) and Bali, and in 1974 on Kalimantan (South Kalimantan) and Nusa Tenggara; dengue has affected all provinces in Indonesia since 1997.

In 2011, there were 58,065 cases with 504 deaths. The morbidity (incidence) rate is 24.44/100,000 population (CFR 0.87%). The five provinces with the highest morbidity rate are Bali (81.08), DKI Jakarta (78.19), Aceh (53.66), Riau Islands (49.70) and Central Sulawesi (47.27). However, the highest CFR was reported in Gorontalo (4.55), Banten (2.70), East Nusa Tenggara (2.41), South Kalimantan (2.35) and Riau (2.28). The CFR was static during 2010 (0.87%) and 2011; however, the incidence rate has reduced significantly from 65.57 (2010) to 24.44 (2011). Most dengue cases are in people aged >15 years (55.1%); however, most deaths were among the age groups 10–14 years (26.1%) and >15 years (26.1%). Only about one fourth of Indonesia’s territory has not been infected by Dengue virus. Although mortality rate shows declining, but morbidity rate and spread of the disease remain high (KOMPAS, January, 17, 2006, page 14).

DHF has been reported from most provinces. Efforts to control dengue include community or intersectoral participation using integrated vector management, active surveillance, emergency preparedness, capacity building, trainings and operational research in vector control. An external evaluation of dengue control program was made in 2002 and again in February 2011, which generated recommendations that have been implemented.

National dialogue on dengue was conducted by the ministries of health and internal affairs on 14 June 2011 and was attended by local government representatives, where the National Declaration for Dengue Prevention and Control was made. The Ministry of Health in collaboration with WHO and the Association of Southeast Asian Nations (ASEAN) launched the first ASEAN Dengue Day in Jakarta on 15 June 2011, attended by ASEAN countries and WHO delegations, to promote the “Jakarta Call for Action” urging all ASEAN countries to combat dengue.

Despite the achievements in dengue prevention and control, challenges include: no specific drug and vaccine; low community participation; high CFR in several districts; inadequate surveillance; and limited budgeting/funding support. In order to further reduce CFR and incidence rates, the national dengue control program has formulated a 2-year plan for 2012–2013, which includes training on dengue program management for district managers from high-incidence districts; training on dengue case management for physicians, pediatricians and interns from districts with high CFR; distributing rapid diagnostic test kits to local health centers and hospitals and improving surveillance; and virus mapping to strengthen the surveillance system.

The Health Ministry estimates that outbreaks of dengue fever cost Indonesia Rp 3.1 trillion (US$363 million) in
financial loses annually, which includes Rp 343 billion in medical expenses (The Jakarta Post, 06/15/2011). Dengue cases in Indonesia, a tropical country with a fast growing population, increase from time to time even though the mortality rate has reportedly declined. Health Ministry systems specialist Soewarta Kosen said that each case resulted in Rp 2.2 million in expenses. “This is a disease that requires substantial money for treatment and recovery,” he said on the sidelines of the first day of ASEAN Dengue Day Conference. Dengue hemorrhagic fever is still a major health problem in Indonesia. The latest outbreak was in 2004. During its peak a total of 78,690 cases were reported every month, with 954 deaths. With 157,370 dengue cases in Indonesia last year, the public spent Rp 343 billion on medical treatment and lost productivity hours calculated at 2,362 disability adjusted life years. The biggest socio impact is losing family member.

CONCLUSION

Health is a human right clearly stated in the Universal Declaration of Human Rights Article 25 as follows: (1) Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control. (2) Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection. But the reality today is far from an appeal by the Declaration that so ideal in its constitution. Yet many diseases especially communicable disease threaten the lives of many people especially children.

Harving and Rönsholt (2007) in their paper wrote that World Health Organization (WHO) estimates that 40% of the world's population lives in areas endemic for dengue fever, and that there are approximately 50 million cases of dengue infection worldwide every year. Meanwhile, in the Constitution of the WHO that was declared in 1946 especially in the 3rd principle clearly stated that: *The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and States*. From the two references above especially if we read comprehensively all nine basic principles of the Constitution of the WHO that promoting and protecting health and respecting, protecting and fulfilling human rights are inextricably linked. Then, more obviously understood that health is one element of human security.

Even the WHO Declaration (1946) reveals that human security has long argued that the "scope" of global security should be expanded to include the threat of infectious disease (WHO Declaration 1946). The primary goal of human security is the protection of individuals, and infectious diseases such as Dengue are among the most serious threats facing individuals around the world. Given the transnational nature of infectious disease, unilateral, state-centered policy approaches to the threat will prove ineffective over the long run. Therefore, adopting a people-centered Human Security model with its emphasis on prevention, individual empowerment, and treatment strategies delivered by an array of global actors is possibly a pioneering approach to deal with the increasing diversity of contagious diseases.

Human security supports broadening the responsibility for ensuring health security. It is shifting down from the national level to individuals, communities and civil organizations; and upward to international institutions and networks. Hence, modernizing international health
rules and regulations, fostering partnerships between public and private sectors as well as enhancing communication and cooperation among states are becoming more important. Public health security has been thrust into the spotlight as countries around the world are preparing for Dengue as global threat.

Growing fears about the death, illness, and socio-economic damage that Dengue epidemics can create have stimulated the re-conceptualization of health as a security issue. Protecting populations from disease risks and ill-health links to the priority of protecting civilian populations from pervasive threats. Given the seriousness of globalized health threats, providing adequate public health capabilities can now be seen as an independent marker of good governance. Bringing health concerns into the policy of human security and the responsibility to protect does not mean that all health issues belong within these areas of policy concern. Connecting dengue, public health and human security, and the responsibility to protect requires, however, heightened policy sensibilities about the dangers globalized disease threats.

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DENGUE HEMORRHAGIC FEVER IN THE HIGHLAND AREAS

Ririh Yudhastuti

Department of Environmental Health
Faculty of Public Health Universitas Airlangga
Kampus C Mulyorejo Surabaya 60115
Email: ririh.unair@gmail.com

ABSTRACT

Dengue Hemorrhagic Fever (DHF), the one of tropical diseases in Indonesia is still become the most health problem. The incidence of DHF in the highlands of Indonesia has not been widely reported. This study aimed to provide an overview incidence of dengue in the highlands of South Sulawesi Tana Toraja district. A case study series was conducted in five district areas at South Sulawesi. The study samples were patients with DHF who recorded in health centers during January 2012 to December 2015. About 390 of patients were found in 2015 there were 106 cases. Most of cases (47%) were found in the district Makale with a height of 760 masl and the highest plateau that no cases of dengue in the district Bittuang with a height of 1425 masl, number of dengue cases were 4.4%. Most cases (52.83%) were male, aged ≥ 15 years (63.20%), did not work / housewife (68.85%), mobility (76.41%), with a good knowledge (54.72%), poor behaviour (66.03%), and has water reservoir (94.33%). Base on PCR examination, Aedes Aegypti in the study area contained dengue virus. Epidemiological investigation on dengue activity indicated that dengue transmission has more likely occurred in the highland region of Tana Toraja, South Sulawesi.

Keywords: Dengue Hemorrhagic Fever, Local Transmission, Highland

INTRODUCTION

Dengue hemorrhagic fever (DHF) is a disease caused by the dengue virus. The virus is transmitted through Aedes aegypti mosquito bites. Environmental factors influencing the incidence and spread of dengue are the physical environment, biological environment, socioeconomic, mobility and health care. The physical environment includes geography, climate and water quality that affects the survival of the vector Aedes aegypti mosquito. In Indonesia, until recently, dengue remains one of the major public health problems.

Dengue is an endemic disease in urban areas. Since it was first discovered in 1968 in Surabaya and Jakarta, the number of dengue cases was continued to increase both in number and areas infected. Every year, sporadically always occurred outbreaks in some areas. Population mobility is one of the mechanisms that contribute to the incidence of the disease through the spread of dengue virus. To faced the high population mobility, it was necessary cooperation among regions to control and measures the disease occurance.

District or municipal bordering regions and ecosystems which have the same disease should work together to find and treat patients with DHF actively and controlling the risk factors. This is done in the perspective of the dynamics of the ecosystem and risk factors among the districts or municipal, between provinces and between geography.

In Tana Toraja Regency was recorded incidence of dengue in 2013, the
year 2014 has been an outbreak of dengue fever with number of cases about 157 people. Tana Toraja is a plateau area and the tourism area. The topography of Tana Toraja district is mountainous with steep slopes an average slope of 25%, altitude 300 - 2500 meter, and the lowest area of the district and the highest part is Bonggakaradeng Bittuang regency.

Vector borne disease is a problem and outbreaks of infectious disease, particularly cases of DHF still the highest in this area. Based on surveillance data in Tana Toraja that the incidence of dengue is not there, but now, this disease become a priority in the district, especialy in the District Makale (above the sea level=760), Makale north (above the sea level=820), Sangalla (above the sea level=817), rembon (above the sea level=762) and Gandang Stone Sillanan (above the sea level=980) for the last 4 years in cases of DHF.

The purpose of this study was to determine the characteristics of the incidence of dengue in the Highlands region of Tana Toraja, particularly about the characteristics of the patient and the potential of horizontal transmission of dengue fever in the highland region.

**MATERIAL & METHOD**

This is a case study to describe a case series of variables of person, place, and time of people who suffer from the disease. This research was conducted in 5 Sub-District areas, consist of Makale (above the sea level=760), North Makale (above the sea level=820), Sangalla (above the sea level=817), Rembon (above the sea level=762) and Gandang Stone Sillanan (above the sea level=7620) for the last 4 years in cases of dengue. Research was held at the end of the period from January to July 2016.

The study population was all confirmed cases of dengue fever were reported to the health center Makale, Makale north, Sangalla, Rembon and Gandang Stone Sillanan. The samples of this study were all cases of dengue confirmed that having a complete medical record in the five health centers. The observed data were the incidence of dengue incidence, the characteristics of DHF patients, the potential for horizontal transmission, and dengue epidemiology investigation activities conducted by the health center Tana Toraja district from 2012 to 2015.

Data DHF patient’s characteristics include gender, age, occupation, mobility, knowledge about dengue, DHF prevention behavior, and water reservoirs in household. Data potential horizontal transmission of dengue in view of the history of the disease and mobility are obtained from interviews and observation using a questionnaire.

Data incidence of dengue and epidemiological investigation of dengue activity were obtained base on observation in the clinic and direct interviews with health center officers. If the respondents were still children or aged under 15 years and/or recorded as deaths dengue, interviews were conducted on family members aged 15-60 years to determine their trans-ovari area cases of arrests of *Ae aegypti* and subsequent mosquito eggs collected for colonized to become adult mosquitoes. Identified the Dengue virus was carried out using real time polymerase chain reaction (RT-PCR).

**RESULT**

The incidence distribution of DHF in the Tana Toraja highlands at an altitude of 700-1425 meters above sea level, and its lowest plateau is located in the District of Rano with an altitude of 700 meters above sea level and is the highest plateau in the District Bittuang with a height of 1425 meters above sea level. Generally, the incident of DHF occurred at an altitude less than 1000 (masl). Makale
sub-district with a height of 760 meters above sea level is the region with the highest incidence of dengue every year. Besides at an altitude less than 1000 masl incidence of dengue also occurred at an altitude more than 1000 meters above sea level, namely the Bittuang sub-district was also found dengue cases annually. The results of the examination of the mosquito's eggs by RT-PCR showed positive presence of dengue virus.

Table 1 showed the number of DHF patients in different topographic in Tana Toraja.

Table 1. Distribution of the number of DHF patients in Tana Toraja based topographic year 2012-2015

<table>
<thead>
<tr>
<th>Sub-districts</th>
<th>Elevation (above sea level)</th>
<th>Case 2012</th>
<th>Case 2013</th>
<th>Case 2014</th>
<th>Case 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonggakarang</td>
<td>920</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Simbuang</td>
<td>1378</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Rano</td>
<td>700</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Mappak</td>
<td>1088</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
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<td>Mengkende</td>
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<td>2</td>
<td>10</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>GandangBatu</td>
<td>980</td>
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<td>6</td>
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<td>2</td>
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<td>Sillanan</td>
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<td>8</td>
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<td>5</td>
<td>5</td>
<td>3</td>
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</tr>
<tr>
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</tr>
<tr>
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<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>MalimbongBalepe</td>
<td>859</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Rantetayo</td>
<td>884</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Kura</td>
<td>882</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Department of Health Tana Toraja, 2016

The incidence distribution of DHF in every sub-district in the highland Districts of Tana Toraja showed that the largest number of dengue cases is located in Makale sub-district as amounted 147 cases during the past 4 years. These area is located at an altitude of 760 (masl), Genesis incidence of Dengue Hemorrhagic Fever above 1000 masl contained in Bittuang districts, although the number of cases every year only a little amount but it was still considered as a case.

Number of dengue cases over the last five years (2012-2015) in the Tana Toraja highlands are 390, in year 2015 and there after, it decreased as amounted of 106 cases. Based on Table 2, most of the respondents were male (52.83%), aged ≥15 years (63.20%), did not work (68.85%), had mobility (76.41%), had a good knowledge about health (54.72%), had poor health behavior (66.03%), and most of the respondents had a water reservoir in household (94.33%).

Table 2. Characteristics of Respondents

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male</td>
<td>56</td>
<td>52.83</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>50</td>
<td>47.17</td>
</tr>
<tr>
<td>Age</td>
<td>≥15years</td>
<td>67</td>
<td>63.20</td>
</tr>
<tr>
<td></td>
<td>&lt;15years</td>
<td>39</td>
<td>36.80</td>
</tr>
<tr>
<td>Work</td>
<td>Farmer</td>
<td>1</td>
<td>0.94</td>
</tr>
<tr>
<td></td>
<td>Entrepreneur</td>
<td>4</td>
<td>3.77</td>
</tr>
<tr>
<td></td>
<td>Private Employees</td>
<td>2</td>
<td>1.88</td>
</tr>
<tr>
<td></td>
<td>Servant/Army/Police</td>
<td>27</td>
<td>25.47</td>
</tr>
<tr>
<td>Doesn’t work</td>
<td>Housewife</td>
<td>17</td>
<td>16.03</td>
</tr>
<tr>
<td></td>
<td>/College student</td>
<td>9</td>
<td>8.49</td>
</tr>
<tr>
<td></td>
<td>Etc</td>
<td>47</td>
<td>44.33</td>
</tr>
<tr>
<td>Mobility</td>
<td>No</td>
<td>81</td>
<td>76.41</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>25</td>
<td>23.59</td>
</tr>
<tr>
<td>Health Sciences</td>
<td>Not good</td>
<td>48</td>
<td>45.28</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>58</td>
<td>54.72</td>
</tr>
<tr>
<td>Healthy behavior</td>
<td>Not Good</td>
<td>70</td>
<td>66.03</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>36</td>
<td>33.97</td>
</tr>
<tr>
<td>Water reservoir</td>
<td>Available</td>
<td>100</td>
<td>94.33</td>
</tr>
<tr>
<td></td>
<td>Not available</td>
<td>6</td>
<td>5.67</td>
</tr>
</tbody>
</table>

According to repondents’ perceived, They believed that the potential horizontal transmission of dengue hemorrhagic fever at local area is most likely derived from local transmission source region because of high frequent of inter-regional mobility from non-endemic areas to endemic areas.
DISCUSSION

Mosquitoes *Ae.aegypti* live at an altitude of 0-500 meters above sea level with a high capability to spread and survival, meanwhile at an altitude of 1000-1500 meters above sea level they have limited capability to the spread because this mosquito can not survive at highland areas due to the temperature change is decreased. In this circumstair mosquitoes can not live optimally (Hidayati, 2008).

Tana Toraja is a region with an altitude of 700-1425 meters above sea level and was included in the category of a plateau area. In this area only a limited possibility the spreading of dengue cases. However, within the period of year 2012-2015 it had been found that dengue fever cases has a fluctuation pattern annually. The peak of outbreaks occurred in year 2013 and was first discovered death cases due this virus infection. The similar case was happened in the other research conducted by Saul LF in Puebla City Mexico (2011), that *Ae. aegypti* as the main vector of dengue fever were found living in the highlands of 1700 meters and a positive carried dengue virus that causes the high incidence of dengue in this country.

*Ae. aegypti* is antrophilic live close to humans to fulfill their need to life, especially for female mosquitoes. The female mosquitoes need human blood to sustain their reproductive cycle. The spreading of *Ae.aegypties* were affected by temperature and humidity, according to the height of a region. The areas with high intensity of rainfall, become a good environment as breeding place for *Ae.aegypti* mosquitoes. Although *Ae. aegypti* has a limited flight range about 50-100 meters, but they could be transported far away under artificial containers through human activities, including to areas outside the specific range. During the winter, the incidence of dengue fever in the highland area, such as in the Mexican border area, was about 32% with many finding of larvas in containers such as waste tires and buckets (Mary et al, 2005).

Similar with the other research conducted by Michael (2008) in the State of Puerto Rico and research conducted by Victor (2010) in Brazil which examined the transmission models of dengue vectors that were influenced by local and global effects of factors. The connectivity between highlands and lowlands areas as well as the improvement of transportation allowed the migration of people with viremia to the highland region. This is a history of interaction among people with the vector of dengue fever when traveling from lowlands to the highland areas. Of the cases of DHF patients, men were most likely to be infected this typical viruses, it caused by cytokine production in women was higher than men. It implied that the immune response in women better than men. In addition, the higher riks among men bacause they were more interested in traveling outside the possible typical of endemic areas.

Another possibility was people of Tana Toraja highlands region who looked for activities to the lowlands area such as the city of Makassar, particularly in Maros which was categorized as endemic area. People who ever visit area become a potential reservoir of dengue virus, and then spread this virus in larger area.

Regarding the relationship between age and occurrence of DHF, it was also found by other researchers which explained that most of DHF patients were 15 years old or more. This is likely due to the transmission of the virus occurred in various places among people who spent most of their time outside the home, such as at work places or at school. It indicates the location of dengue virus infection has changed, no longer found around the housing environment.

On the other hand, the opposite relationship between the incidence of DHF and work place was also explained
by other researchers. According to several studies majority of patients with DHF were group of people who does not work out of house, such as housewives, mother and children. This is most likely due to people who do not work outside had a chance to interact with the environment that tends to be narrower than the people who worked outside. Housewives mother also had a relatively poor knowledge about health. Knowledge of good health usually comes from personal experience and others. Work is also with earnings that can be used to maintain good health through the intake of healthy and nutritious food will improved the immune sistem.

The findings about the relationship of mobility and the incidence of dengue were also reported Wichmann (2003). He explained that most patients with DHF had high mobility out of the region. It was most likely due to the improvement of transportation facility, cause the increasing population mobility and then the dengue-transmitting resources spread easily from one area to another, or from endemic areas to non-endemic. The high mobility of the population was due to the job site, searching of health services, shopping outside the area, or visiting the family, as well as to the tourism activities.

The relationship between knowledge of health and the incidence of DHF was in accordance with the findings of several other studies. Some studies revealed that majority of patients with DHF have a good knowledge about dengue. This is most likely occurred because of the opportunity to get information about dengue from health professionals when patients are undergoing treatment at the health care centers. In addition, the education level of patients who otherwise able to receive a variety of information related to dengue from electronic and other mass media as well as from health workers. Person with higher education level had the broader insights and increased knowledge, including about dengue.

Relationship between healthy behaviors and the incidence of dengue was also found in some other studies. Many studies explained that majority of patients with DHF did not have a good behavior in carrying out dengue prevention activities. This was most likely occurred due to lack of awareness on preventing dengue transmission. The discrepancy between knowledge and behavior showed that good knowledge did not lead to improve the behavior to prevent transmission of dengue viruses.

Housewives did not have good knowledge the water reservoir in household as a breeding place for Ae. aegypti. People have deliberately kept clean water for daily use as much of the source of water. Of the 106 dengue cases that exist in 2015, were a local case which most likely suffered from contagion from a local source in the highlands. This is supported by the discovery of breeding sites and larvae (larvae) of Ae. Aegypti containing dengue virus positive after PCR performed which found around the residence of cases in the highland areas.

Vertically virus transmission is vertical transmission of dengue infective female mosquitoes to their offspring. This means that infectious dengue mosquitoes could transmit the virus to their eggs (Gubler, 2004). The findings about the potential for horizontal transmission or a local case of dengue fever in accordance to previous studies. Although the rate of population mobilization was recorded quite high, but none of people was registered traveling to endemic areas of dengue virus. Because of the district of Tana Toraja is a tourism area, therefore during the holidays many visitors from Maros and Makassar were become carrier of endemic dengue.

There is only one health center capable of conducting an epidemiological investigation of DHF according to the standard procedure of the Ministry of Health of the Republic of Indonesia. According to the Ministry of Health
report, a well standardized epidemiological investigation of DHF conducted still lacked in Indonesia. This suggests that the capacity of health centers in investigation of the epidemiology of dengue in Tana Toraja highlands should be increased. In addition, the ability to do epidemiological investigation of dengue fever in new territories plateau should be improved, especially in tourism areas like Tana Toraja as well as the improvement of health centers worker's capacity in the Highlands regions.

**CONCLUSIONS**

Horizontal transmission of dengue fever in the highland areas was occurred among people who had poor health behavior, and had water reservoirs in household. Found instances of alleged local case and not all health centers capable conducting epidemiological investigation of dengue. In related to the people mobility, citizens who had the landfill areas have higher risk to provided a reservoir as a breeding place for *Ae aegypti* mosquitoes.

**ACKNOWLEDGMENTS**

We acknowledge to Ministry of Health of the Republic of Indonesia, Poltekes Makassar and Sartika F, students of Master Program on Environmental Health, Faculty of Public Health, Universitas Airlangga Surabaya, who provided some data for this manuscript.

**REFERENCES**


SATISFACTION LEVEL OF DENTIST AND MANAGER OF FIRST LEVEL HEALTH SERVICES TOWARD APPLICATION OF BPJS SYSTEM

Dyah Nawang Palupi, Yuanita Lely Rachmawati, Fania Alfadin Uba

Dental Public Health, Faculty of Dental Medicine, Brawijaya University, Jl. Veteran, Malang, Indonesia
Email: dyah.nawang@gmail.com

ABSTRACT

Satisfaction is the fulfillment of the needs, desires or expectations. Since the enactment of the JKN in Indonesia, Health Facilities (dentists and managers of health facilities on first level) who has collaboration with the BPJS have a number of rights and obligations that do not always match. The aim of this study is to analyze the satisfaction level of dentists and managers of health facilities before and after application of BPJS System.

The design of this study is research with cross sectional approach. This study was taken in Malang City. Respondents were selected using total sampling method (N=30). Based on the result, there is significant value on each sample of dentist and manager, with value of p<0.001 and p=0.003. It can be concluded that the level of satisfaction of the dentist and the manager of first level health facility (FKTP) before the application of the BPJS system is higher than the level satisfaction after the adoption of BPJS. We suggest that the system imposed by BPJS can always get attention so that the future implementation of the system will be in accordance with the expectation of service providers.

Keywords: Satisfaction, Dentist and Manager of First Level Health Facility, BPJS System

INTRODUCTION

Satisfaction is the fulfillment of the needs, desires or expectations (Supriyanto, 2010). Customer satisfaction is determined by whether or not a product meets customers’ expectations. So that customer satisfaction is the key of the willingness to buy more products they want. Satisfied customer will spread his satisfaction to others while less satisfied customer will move to competitors (Kotler, 2005).

Since January 2014, the Government of Indonesia established a Board of Social Security Agency or BPJS, an institution established to administer the Social Security program in Indonesia based on Acts No. 40 of 2004 and Article 7 of Acts No. 24 of 2011. BPJS mentioned above including Health BPJS and employment BPJS which organizes health insurance program, employment insurance program due to accident, life insurance program, pension insurance program, and retirement. BPJS established by Act No. 4 of 2011 on BPJS aims to enable the implementation of a guaranted basic needs for each participant and/or their family members (Ministry of Health, 2014).

During the progress, BPJS implementation has not meet practitioners’ expectation, so in February 29th, 2016 there was a demonstration in front of the Indonesian State Palace. Demonstrations involving hundreds of doctors who are members of United Indonesian Doctors (DIB), one of which is dentist. The protests demanding reformation in the National Health Insurance system or JKN (Batubara, 2016). Implementation of the
health care service in BPJS system consisting of first, second and third level.

Health care providers at the first level is managed by First Level Health Facilities (FKTP). FKTP consists of health centers, General Practitioner, Dentist Practitioner, First hand Clinics and Hospitals D Primary. In performing its duties, FKTP has rights and obligations towards BPJS system which stated in the employment contract with BPJS. So BPJS Health System is conducted based on that contract between two parties (Ministry of Health, 2014). Based on that situation, researcher wants to assess the level of satisfaction of health care providers toward the implemented system, and also is there any difference between expectations and satisfaction of health BPJS system has been applied. The study was conducted in the city of Malang, Malang as one of the cities in Indonesia which integrate with BPJS system has a number of Dentists and FKTP Managers that served 30 people based on downloads on the BPJS website Malang.

**MATERIAL & METHOD**

Patient satisfaction measurement is analyzed descriptively by cross sectional approach to obtain the difference between expectations and satisfaction level of dentists and managers of health facilities first level dental services in Malang before and after signing a contract with BPJS. In this study, the population of the study were all dentists and managers of health facilities first level dental services in Malang which apply BPJS system.

Sampling technique conducted by total sampling method. The number of samples in this study is 30 samples. Research instrument using structured questionnaire. Research was conducted in the first level health facilities Dental Services throughout Malang and data was collected from April to May, 2016.

There are two variables in this study: independent variable, which is BPJS system and dependent variable, which is satisfaction level of dentists and FKTP managers’ dental services. Independent variables: Health BPJS system. Health BPJS system in this study is comprised of rights and obligations obtained by each FKTP including: availability of participant data, cost of capitation and non-capitation, determination of the distribution of patients, application of P-Care, information availability, and policy assessment and policy evaluation by BPJS. Satisfaction level was measured before and after using the same questionnaire. Dependent variables: the level of expectations and satisfaction of dentists and managers FKTP dental services.

Expectations and satisfaction of dentists and managers of health facilities first level dental services was measured by questionnaire consisting of 15 questions. The questionnaire consisted of rights and obligations of each FKTP which sign contract with BPJS. Rights and Obligations including: availability of participant data, capitation fees and non-capitation, determination of the distribution of patients, P-Care applications, information availability, policy assessment and evaluation by BPJS. Satisfaction level was measured before and after using the same questionnaire.

Primary data was collected from dentists and managers as respondents using questionnaire consisting questions related to the study, respondents then select one out of five levels of answers. Questionnaires were administered after informed consent was signed, then finally returned after its completed. Secondary data collection is obtained from Health BPJS website.
RESULT

Validity and Reliability
Validity of test results showed that 15 items in question is valid because the value of $r$ arithmetic $\geq r$ table at 0.514. Reliability test showed the subjects in this study are dentist and manager in equal numbers.

Expectation Level of Dentists towards Health BPJS System Implementation
We obtained sample of 15 dentists as respondents. Based on this study, we obtained the frequency based on expectation level of dentists towards BPJS, which 33.3% respondents stated that it is appropriate, 60% stated quite appropriate, 6.7% stated less appropriate and no respondents stated very appropriate nor very inappropriate.

Satisfaction Level of Dentists towards Health BPJS System Implementation
Result from satisfaction level showed that 60% respondents were satisfied enough, 40% were less satisfied and no respondent stated very satisfied or unsatisfied.

Expectation Level of Health Managers towards Health BPJS System Implementation
We obtained sample of 15 health centers managers as respondents. Respondents were first explained that the questionnaire is in the form of ratings which show health managers’ expectation about the implementation of the Health BPJS system. Based on this study, we obtained the frequency based on expectation level of health managers towards BPJS, which 26.7% stated less appropriate and no respondents stated very appropriate nor very appropriate.

Satisfaction Level of Health Managers towards Health BPJS System Implementation
Result from satisfaction level showed that 6.7% respondents were satisfied, 33.3% were quite satisfied, 60% were less satisfied and no respondents stated great satisfaction nor very unsatisfied.

Normality Test
This study used Shapiro-Wilk normality test with level of significance $\alpha=5\%$. Normality test results showed all data distributed normally. This is due to the significance value ($p$-value)$>\alpha=0.05$. Proceed to parametric test using Paired T-test.

Paired T-Test Result

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Mean</th>
<th>SD</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>49.87</td>
<td>7.009</td>
<td>0.000</td>
</tr>
<tr>
<td>After</td>
<td>40.87</td>
<td>4.240</td>
<td></td>
</tr>
<tr>
<td>Mean Score Difference</td>
<td>9.00</td>
<td>6.939</td>
<td></td>
</tr>
</tbody>
</table>

From the paired T test results we obtained average of dentists’ expectation level towards the implementation of BPJS is at 49.87 with standard deviation 7.009. Meanwhile the average score of satisfaction is at 40.87 with standard deviation of 4.240.

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Mean</th>
<th>SD</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>47.40</td>
<td>9.356</td>
<td>0.003</td>
</tr>
<tr>
<td>After</td>
<td>39.07</td>
<td>7.869</td>
<td></td>
</tr>
<tr>
<td>Mean score Difference</td>
<td>8.33</td>
<td>9.069</td>
<td></td>
</tr>
</tbody>
</table>

From the paired T test results we obtained average of health managers’ expectation level towards the implementation of BPJS is at 47.40 with standard deviation of 9.356. Meanwhile the average score of satisfaction is at 39.07 with standard deviation of 7.869.

Questionnaire Analysis Result
From the questionnaire used in this study both for dentists and health managers, there were 15 question items
which we obtained mean value for each question as follows:

Table 3. Mean Result for Each Question Item

<table>
<thead>
<tr>
<th>Item</th>
<th>Dentist E</th>
<th>Dentist S</th>
<th>Health Manager E</th>
<th>Health Manager S</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.20</td>
<td>2.40</td>
<td>3.40</td>
<td>2.80</td>
</tr>
<tr>
<td>2</td>
<td>3.13</td>
<td>2.33</td>
<td>2.60</td>
<td>1.73</td>
</tr>
<tr>
<td>3</td>
<td>3.20</td>
<td>2.80</td>
<td>3.13</td>
<td>2.33</td>
</tr>
<tr>
<td>4</td>
<td>3.20</td>
<td>2.53</td>
<td>3.33</td>
<td>2.80</td>
</tr>
<tr>
<td>5</td>
<td>3.27</td>
<td>2.87</td>
<td>3.27</td>
<td>2.73</td>
</tr>
<tr>
<td>6</td>
<td>3.33</td>
<td>2.67</td>
<td>3.00</td>
<td>2.60</td>
</tr>
<tr>
<td>7</td>
<td>3.27</td>
<td>2.73</td>
<td>3.27</td>
<td>2.93</td>
</tr>
<tr>
<td>8</td>
<td>3.53</td>
<td>2.87</td>
<td>2.93</td>
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<td>10</td>
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<td>11</td>
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<td>14</td>
<td>3.53</td>
<td>2.87</td>
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</tr>
<tr>
<td>15</td>
<td>3.33</td>
<td>2.60</td>
<td>3.27</td>
<td>2.60</td>
</tr>
</tbody>
</table>

Explanation:
E: Expectation
S: Satisfaction

From the 15 questions on the questionnaire assigned to the respondents, there was a question with the lowest score which is the question item number two regarding the amount of capitation fees granted by BPJS.

**DISCUSSION**

The level of expectation and satisfaction toward the implementation of BPJS system are influenced by the implemented system. Differences in the level of expectations and satisfaction towards the implementation of BPJS system can be observed from the availability of participant data. The availability of participants data in the National Health Insurance system including the participants, which means everyone, including foreigners who work at least six months in Indonesia and pay fees or dues paid by the government (Departemen Kesehatan, 2014). Participants consisted of two groups: participants Recipient Contribution (PBI) health insurance and health insurance participants not PBI (Departmen Kesehatan, 2014).

Furthermore, after officially registered a BPJS participant, patients will receive participant card. Participant card contains participant number, name, date of birth, NIK and FKTP specified by BPJS. Based on research that has been done, most of the FKTP said there are frequent errors when entering participant data at a predetermined reporting format, so it takes retry until the participant data can be contained, it also takes more time.

Capitation is one mechanism of payment change method from the form of fee for service to prospective payment system. Capitation is based on number of insured people whether in ill or healthy condition, which the amount is fixed and generally paid in advanced without calculating number of consultations or service usage in the health care center. Capitation can also define as payment method for health care service where the service provider are paid in a fixed amount per patient regardless the number or type of service which is provided based on capitation amount for dentist in accordance with Ministry of Health Decree no. 69 of 2013 which is Rp 2,000.00/person/month. Determination of capitation amount is based on the calculation from estimation of maximum Health BPJS participants in one FKTP, which are 10,000 participants. In the implementation, BPJS determines membership in accordance with the number of participants who register and select the primary health care. The number of participant might be different among each FKTP, resulting difference in capitation amount.

Non capitation rate is the amount of the payment of claims by BPJS to FKTP
Based on the type and amount of health care provided. Non capitation rates in this case is enacted in FKTP which conducts health services outside the scope of capitation payment, including: 1) Ambulance services; 2) Medication from re-referral; 3) Supporting Examination for re-referral care; 4) Certain Health Screening service; 5) Hospitalization in first level care; 6) Obstetric care and neonatal; 7) Family planning service in the form MOP/vasectomy; 8) Compensation in area with no eligible FKTP; 9) Blood service; and 10) Emergency services in FKTP which do not cooperate with BPJS.

In the implementation, payment of non-capitation fee to the FKTP often experiencing delays. Payment are made from Health BPJS to the local government, while there has been no clear rule regarding non-capitation fee payment from local government to FKTP.

Next issue in differences expectations and satisfaction with the implementation of the system is the distribution of participants in FKTP which is determined by BPJS. It can be assumed that could be any FKTP got patients with distant house and less transportation access, so the participant tends to choose closer FKTP rather than the assigned FKTP. It becomes obstacle for FKTP because the participant will be asked to pay for health service if they visited more than two times in FKTP which is not properly assigned, and the health service will work extra. In accordance with the problem, according to the American health service access monitoring committee quoted from Ryonah (2015), access is utilization of punctual health care service to achieve excellent health status.

Access to health service is said to be fair if health service is distributed based on geographic status, socio-economic and community needs (Retnaningsih, 2013). So, it is necessary to consider participants access in deter-mining assigned FKTP. To overcome this problem, BPJS entitles the participant to select the desired FKTP (Presidential Decree No. 12 of 2013). But also, according to this issue, occurrence of participant mutation will bring impact to the related FKTP regarding capitation amount and number of served participants (Widiastutti, 2011).

Furthermore in the implementation, according BPJS Regulation No. 1 of 2014 Article 52 paragraph (1), stated administrative services consist of patient enrollment fees and other administrative costs that occur during the treatment or health care participants; examination, treatment, and medical consultation; premedication; orodental emergencies; revocation of deciduous teeth (topical and infiltration); permanent tooth extractions without complications; post-extraction drugs; composite fillings / GIC; and scaling of teeth or tartar cleaning. However, in practice, information on the scope of services are seemed inadequate. For example, treatment or dental scaling and cleaning of tartar, for some FKTP considered a cosmetic treatment that is not covered.

In the implementation of the National Health Insurance program, access to secondary health services such as hospitals can not be done without a referral from a primary health care facilities in this case: health care center and dentist in FKTP. This is in accordance with the Regulation of the Ministry of Health of the Republic Indonesia Number 28 Year 2014 on Guidelines for the Implementation of the National Health Insurance Program that health services are implemented in the form of stages/levels starting from the first level of health care. The second level of health care can only be provided on a referral from the health service level second or first level, except in emergencies, specified patient's health problems, geographic considerations, and consideration of the availability of facilities.

Socialization provided to participants on the functions of FKTP BPJS and implementation of staging
referral is still lacking. One of them is that participants often come to FKTP to request a referral to a desired hospital despite already being explained by health provider. Although there are limits on number of referrals by 15% of the number of visits but FKTP is forced to make referrals as the request and needs of BPJS participant. If this constantly happens, the number of referrals by FKTP will be high. As a result, the amount of capitation given by BPJS will be reduced in the next period.

Furthermore, the lack of clarity regarding the list FKRTL information provided. In many cases, often FKRTL reject patients referred by FKTP. The underlying reason is the personal data of patients referred not listed in the list of patient referrals in P-Care applications. FKRTL in Malang for dental services that accept BPJS patients also relatively small in number. This becomes a problem for FKTP to give an explanation to the patient as a BPJS participants. This is in contrast to the statement by Lori DiPrete Brown et.al. (1992) in Bustami (2011) that continuity of care means the patient will receive the full services needed without reducing the diagnostic procedures and unnecessary therapy. In this case the patient should also have access to a referral for further necessary services (Royanah, 2015).

Evaluation conducted by BPJS toward FKTP including facility aspects, health services and visitation rate aspects has not been done until the time of the study. FKTP gets no clear information on criteria for the facility aspect, health services aspect as well as visit rate aspect included in the assessment conducted by Health BPJS.

Punishment policy applied by BPJS if FKTP does not serve the participants according to their rights and obligations has never caught in the practice. One thing that has to be noticed is the mentioned sanction as stated in the contract does not specify the form of these sanctions so that clarification of sanction forms is needed.

From this analysis it is known that the level of expectation of the BPJS system application is higher than the level of satisfaction after the adoption BPJS system. In other words, it can be concluded that the system has not been able to satisfy FKTP BPJS in this case including dentists and health managers.

CONCLUSION

Conclusions based on the analysis and discussion are as follows:
1) The level of expectation from dentists and health managers on the application of the BPJS system is higher than the level of satisfaction with the implementation BPJS. This means that the BPJS system has not been able to meet the dentists and managers expectation.
2) There are difference between expectation and satisfaction towards implementation of BPJS health system on both sample groups; dentists and health managers.

REFERENCES


ABSTRACT

In a building, means of escape has the highest level of importance of the existing facilities, in an effort to deal with emergency situations caused by fire, it is therefore necessary to attempt an assessment of the means of escape. To make a simulation model development as an objective effort to avoid risk in fire emergency evacuation.

The method used in this study is to carry out a simulation of the room in the most extreme conditions in overcrowded conditions with the speed of the occupants of 1.55 m/s for males and 1.45 m/s for women, the development of the simulation model of evacuation is carried out through the software tool.

Condition of the door above the safe limit of time to escape from the room, the effort to produce the time shift in the location of the door under the safe point. Conditions resulted in two doors below the safe limit of time, all positions are located in an area at least half of the diameter of the room, in a position symmetrical conditions the door will give you time to save is higher than other conditions.

Keywords: Means of Escape, The Number of Exit, Exit Width, Crowded

INTRODUCTION

Evacuation is procedures that must be performed when meet an emergency, an emergency is an unforeseen situation that threatens us, customers, or the public, disrupt or terminate our operations or cause physical or environmental damage. A state of emergency can be caused due to natural or artificial. The best way to protect yourself and others is to prepare to respond to an emergency before it happens (OSHA 3088, 2001). Efforts to escape execution will be run in line with expectations when supported by the facility in accordance with the rules and standards set regarding the means of escape.

A means of escape defined as a structure that is provided with a safe route for people to escape in case of fire, from any point in the building to safety, without outside help. This definition provides a basis for planning solutions fires in buildings and other structures. But there are some rules governing the provision of the means of escape in certain situations. It is useful for the provision of escape varies from building to building depending on certain factors (Furness & Muckett, 2007).

According to (Furness & Muckett, 2007) factors to be considered related to rescue themselves from certain situations, among others: Time evacuation, Evacuation procedures, Residents, Mileage, Door exit, These escape out, Emergency Lighting Signs, Tool detection, warning and fire prevention.

In addition to these factors (Liu, Yang, Fang, & Li, 2009) in his research states that there are some things that are often considered by someone in his attempt to save themselves from
emergency exit door. Some things need to consider in addition to the distance to the exit door, also pay attention to the density of a person in the vicinity. To prove these two things are done by simulation and compared with field experiments. Although the overall trend shows that the distances from the exit door, the distance is not the determining factor because there are other factors such as the selection of the route to the exit door and exit door around the occupant density.

Shi et al. (2009) in his study states that performance base design is something important functions to be done in realizing the building safe from fires and incorrect use of a simulation of the behavior of people who need to be in manipulating the fire hazard. So, it is necessary to provide as material to be included in the model evacuation. Data needs to be considered in conducting the activity modeling right includes data on pre-evacuation of the building type, speed in running highly influenced by the type of road, road conditions, the type of occupants, the type of scene, the characteristics of the occupants, building characteristics and the characteristics of fire, activities during the evacuation and decision-election exit door.

In addition to pre-evacuation (Tavares, 2010) in his research focuses on t-move is a combination of travel time and the flow time, by simulation in a field of "T" in the room horizontally by comparing the laying of the exit door asymmetrically or symmetrically against the wall, will look for the results of the most efficient for the safety of the occupants to get to the exit, based on his research found that the layout is symmetrical to the wall will give more effective in efforts to rescue the occupants of a room, which is referred to as a distance relative to the exit door as an alternative spacing exit in addition to using the existing regulations.

Design System Occupational Health and Safety in the building is largely determined by the characteristics of the buildings owned. Some characteristics of a building under (Nagai et al., 2004) that the building has the shape of square room with a number of door exit 1 or single exit (Balter, 1993; Tajima, 2001; Isobe, 2003; Song, 2006), 2 (Tavares, 2010), 3 and 4, and a T shape (Tajima & Nagatani, 2002; Tavares, 2010), L shape (Tavares, 2010), the unusual shape (NFPA 101, 2007) with the width of the exit door is varied (Parisi & Dorso, 2005; Gwynne, 2005) as well as some form of another room, each of which has different characteristics.

This research attention is to analyze the characteristics of the building, such as research from Tavares (2010) who have not been paying attention from another room "L" shape, square, unusual shapes in accordance with National Fire Protection Association (NFPA), the location of exits can be seen from the number of door (1 door, 2 door, 3 door, 4 door), door position (asymmetrical or symmetrical), the width of exit door that varies, by performing various modifications is whether the results obtained can still provide value efficiently to the safety of the occupants. It is necessary to develop a new evacuation models which are able to accommodate those needs. The result of the development and incorporation of the resulting model will be expected to perform a new evacuation simulation model.

The purpose of this research is the develop of an evacuation simulation model to get the quickest evacuation time to obtain a position with the number and width of exit doors according to the conditions that exist.

**MATERIAL & METHOD**

**Simulation based Scenario**

In this phase, the simulation related to various forms of the room with the existing rules by performing simulations to obtain the desired alternative. The scenario used in this simulation include:
Shape room, room size, speed is used, the amount of the exit, the exit width, high density.

Development Model

In the analysis of the modeling results, the analysis is done by focusing on the model created, the critical variables that are defined and the results of running the simulation.

Model development is done: determine the shape of the room to be used as a reference for the development of models, characteristics of residents and election exit door as the end of this problem. Judging from the performance that in conducting a series of activities will be divided according to the level or the level that is used from a strategic level in this activity determination of selection, the level of tactics in the form of activity of election exit door by taking into account the number of the exit door intended and level operational with attention to form buildings, barriers, waiting time, time to walk toward the exit, the personal aspect.

Tactics election exit door, the development model consists of:

1) The number of available exit door.
   Based on existing literature that there are several exit doors that can be used from one exit, two exits, three to four exits. In developing this model will be tested all existing exit doors.

2) Characteristics exit doors associated with the distance between the occupants with exit door to be used. Occupants are generally frequent use or choose the shortest route, although they seldom realize that they have minimized the distance as the main strategy in these elections. By choosing the shortest route it will require a faster time or a little time. Walked directly toward the exit door of a point or hindered by barriers or other tenants is one important note. Density or occupant density is also a factor to consider in the effort toward the exit door.

3) Characteristics of the person or occupant relating to gender and age is a factor to consider in efforts towards the exit door.

Operational level

This level was done by observing the speed of the occupants were obtained from the literature that there are for example used:

a. Speed
   Average speed of 1.34 m/s and a standard deviation of 0.37 m/s velocity variations are between 0.97 m/s and 1.65 m/s, the speed was 1.2 m/s. Based on the speed we get slow, medium and high. (Daamen, 2004).

b. Density
   Spoken density ranging from 0.085 m², the maximum density of 6.7 P/m², in fact everyone density ranging between 2.0 and 2.9 P/m² for activity wait. Occupants will feel comfortable with the room 0.27 to 0.84 m², the optimum density of 1.3 to 1.8 P/m². Physical contact can be avoided with a density of 3.0 to 3.5 P/m² (Daamen, 2004).

c. Age
   Age is also used as an indicator of the speed of movement of the inhabitants.

d. Ethnic groups (Ras)
   Based on research (Daamen, 2004) the average speed of a variety of different ethnic groups, research in Europe of 1.41 m/s, research in the United States: 1.35 m/s, the study in Australia of 1.44 m/s and research in Asia 1.24 m/s. The maximum flow rate in Asian countries vary between 1,48P/ms and 1:53 P/ms. In America and Europe (capacity of the current range between 1.0 and 1.29 P/ms).

e. Gender
   Males have a walking speed of about 10.9% higher than the running speed of the woman (Weidmann, 1993) the average walking speed of 1.41 m/s and 1.27 m for men/women, while (Hoel,
1968) observe the average speed for a man of 1.55 m/s for women 1.45 m/s. Walking speed difference between men and women may be the result of physical or anthropometric characteristics of men and women, which could produce greater stride length and step frequency is higher for men.

f. Direction of travel
One possible direction for collisions lower. Two-way flow causes a decrease in the flow of pedestrians (4% in the distribution direction of 50%/50% and 14.5% on a 90%/10%) (Navin & Wheeler 1969; Weidmann, 1993)

Cross flow is the flow of pedestrians approximately perpendicular and intersects with another pedestrian flow. In general, one refers to the smaller of the two streams as cross flow. The main flow did not change significantly until the pedestrian density of about 0.8-1.0 P/m2 (Khisty, 1982). Small stream began to change when approaching a density of 0.7-0.8 P/m2. Smaller flow rates seem higher than the speed of the main flow for pedestrians on a smaller group must act aggressively to cross the main stream. Both flow into one, for the members of a small stream just waiting for an empty space in the main stream and then speed up the movement through a heavier flow. Finally, when the main flow rate reaches 1.0 P/m2, a small stream is reduced drastically and formed a queue.

RESULT

Development of Simulation Scenarios
Evacuation
In this study, carried out the development scenario. The development of this scenario was done to see the changes that will occur in some of the variables in modeling the impact of changes in multiple variables. Scenarios were developed that changes in the position of the door that is in the form of buildings that surrounded. Hopefully, by the development of this scenario, it can be seen how much influence the number of doors and door position at a speed of occupants in the room to leave the model used. Here is an explanation of the scenario run.

Position the Evacuation at the Door
This scenario is a change in the number of occupants in the room ranging from 33 residents who represent a quarter of the full condition, 45 residents who represent three-quarters full condition, and 66 residents who represent half of the full condition that each will be simulated at a speed of 1.55 m/s, the speed of 1.45 m/s and speed conditions 50% of occupants of 1.55 m/s and 50% of occupants of 1.45 m/s by the full condition and 50% of 1.45 m/s and 50% 1.55 m/s in accordance with the position of the exit door that covers the existing condition of a room modeled rooms used.

Change the position of the exit door of each building has a direct influence on the value the speed out of the occupants in the room to leave the model used, as well as the number of doors and door position. So, with this scenario, it will be seen how big influence on these variables, especially its influence to speed the occupants leave the room models are used that influence the speed are obtained. Changes in the value of the speed of the occupants in the room to leave the model used.

Determination of the number of points according to the position used for simulations performed with random numbers with help of Microsoft Excel that will meet random numbers are then used to determine the points that will be used in the simulation as seen on table 1, 2 and 3.

Simulations on 33 points occupant performed using several speeds, ranging
from using a speed of 1.55 m/s for all residents so that all residents assumed occupied by the male gender and based on a simulation that has been done to produce a time of 8.6 seconds. In addition to using speed to male occupants of number 33 also uses the speed of 1.45 m/s with a speed which is assumed to all residents who were present inside the room are women, with the speed based on the simulations carried out resulted in the evacuation time of 8.8 seconds, likewise try another simulation for the number of occupants between men and women 50-50 with the provisions in accordance with the number of people as a whole. So that there were half and half behind the front line with the gender of each simulation produced where by the time 8.7 seconds.

Table 1. Occupant Position in the Shuffle Room (33 points).

<table>
<thead>
<tr>
<th>Random Table</th>
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<tbody>
<tr>
<td>3</td>
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<tr>
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<tr>
<td>7</td>
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<tr>
<td>8</td>
</tr>
<tr>
<td>11</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>16</td>
</tr>
</tbody>
</table>

Based on the simulation results generated there that time how the existing conditions that at position 120 resulting time could save as many as 33 people in crowded conditions takes 8.6 seconds with a speed of 1.55 m/s (Figure 1). Based on these results, then calculation was performed to see if everyone who are in the room was able to be saved or not.

Attempts to change the location or position of the door with the same number and the same size, it is possible will result in faster time to look at the position of the door so that everyone can spread out evenly, which in turn would result in the distance everyone to a place out shorter so that it will produce faster time. Such efforts have been done to try several alternatives by shifting the location of the door slowly to obtain the desired results.

Based on the simulation has been conducted found that at some point located at the position of point 122, the position of point 123, the position of point 124, the position of point 125, the position of point 126, the position of point 127 and the position of the point 19 generates time still under the time required for the safe limit.

Figure 1. Condition of 33 Occupants in Indoor, Queued in Front of the Door and Escape Succeeding in A Few Seconds Random Observations with Speed 1.55m/s.

Simulation at 45 points occupant performed using several speeds, ranging from using a speed of 1.55 m/s for all residents so that all residents assumed occupied by the male gender and based simulation has been conducted resulted in 9.3 seconds. In addition to using speed to male occupants of number 33 also uses the speed of 1.45 m/s with a speed which is assumed to all residents who were present inside the room are women, with the speed based on the simulations carried out resulted in the evacuation time of 10.6 seconds, likewise try another simulation for the number of occupants between men and women 50-50 with the provisions in accordance with the number of people as a whole, so that there were half and half behind the front line with the gender of each which is based simulation generated 10.3 seconds.
Table 2. Occupant Position in the Shuffle Room (45 points).

<table>
<thead>
<tr>
<th>Random Table</th>
</tr>
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<tbody>
<tr>
<td>2 12 20 37 49 67 75 88 101</td>
</tr>
<tr>
<td>5 15 24 39 50 68 76 90 103</td>
</tr>
<tr>
<td>9 17 26 40 53 69 80 92 107</td>
</tr>
<tr>
<td>10 18 33 44 56 70 81 94 108</td>
</tr>
<tr>
<td>11 19 36 48 61 72 85 97 117</td>
</tr>
</tbody>
</table>

Simulation is designed to see how the conditions for 0.33% of the total condition of the occupants of the room capacity, in this case as many as 66 people are representation from 0.33% population existing conditions in the room, where the resulting speed is expected to be able to accommodate all the residents so that they can out in accordance with the standard expected. Based on the simulation results generated there that time as the conditions that exist at position 120 that generated the time to be able to save as many as 66 people in crowded conditions it takes 9.3 seconds with a speed of 1.55 m/s (Figure 2). Based on these results, then calculation was performed to see if everyone is in the room was able to be saved or not.

In the room Queuing Out the room

Simulation is designed to see how the conditions for the condition of half of the total occupant of the room capacity, in this case as many as 66 people are representatives of half the state's population that is in the room, where the resulting speed is expected to be able to accommodate all the residents so that they can get out in accordance with the standard expected. Based on the simulation results generated there that time as the conditions that exist at position 120 that generated the time to be able to save as many as 66 people in crowded conditions it takes 13.6 seconds with a speed of 1.55 m/s (Figure 3). Based on these results further calculation was done to see if all the people who are in that room was able to be saved or not.

Table 3. Occupant Position in the Shuffle Room (66 points).

<table>
<thead>
<tr>
<th>Random Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 7 15 28 37 48 60 72 80 105 126</td>
</tr>
<tr>
<td>2 8 16 29 39 51 61 73 83 107 128</td>
</tr>
<tr>
<td>3 9 17 30 43 53 62 74 86 115 129</td>
</tr>
<tr>
<td>4 11 18 32 44 54 64 75 90 117 130</td>
</tr>
<tr>
<td>5 12 21 33 45 55 66 77 92 119 146</td>
</tr>
<tr>
<td>6 13 24 36 47 59 71 78 104 124 56</td>
</tr>
</tbody>
</table>

Simulations on 66 points occupants performed several speeds, ranging from a speed of 1.55 m/s for all residents so that all residents assumed occupied by the male gender and based on a simulation that has been done to produce a time of 13.6 seconds. In addition to use the speed for male occupants of number 33 also uses the speed of 1.45 m/s which is assumed to all residents who were present inside the room are women, with the speed based on the simulations carried out resulted in the evacuation time of 113.9 seconds. Likewise try another simulation for the number of occupants between men and women 50-50 with the provisions in accordance with the number of people as a whole, so that there were half and half behind the front line with the gender of each which is based simulation produced at 13.9 seconds.

![Figure 2. Condition of 45 Occupants in Indoor, Queued in Front Doors and Escape succeeded in Few Seconds Observations Randomly with Speed 1.55 m/s.](image)

![Figure 3. Condition of 45 Occupants in Indoor, Queued in Front Doors and Escape succeeded in Few Seconds Observations Randomly with Speed 1.55 m/s.](image)
CONCLUSIONS

After modeling, simulation and analysis in this study, the conclusions that can be drawn are as follows: 1) On the condition of the door in accordance with existing conditions resulted in 27.8 seconds over the time limit of 24 seconds to safely escape from the room, need an effort shift the location of the door in order to know the position of point that produces a safe time, at which point symmetric with respect to the previous entrance point positions 122: 23.9 seconds, the position of point 123: 23.8 seconds and the position of point 124: 24 seconds, the position of point 125: 24 seconds, the position of point 126: 24 seconds, and the position of point 127: 24 seconds; 2) Need to increase the number of doors as another alternative based on the results of calculation and simulation results are there to produce a time under the safety limit: 12 seconds at position 120-126 point: 12.0 seconds, positions 120-127 point: 11.4 seconds and the 120 point position -128: 11.0 seconds, positions 120-129 point: 11.4 seconds and 120-130 positions: 11 seconds where all these positions is in the region of at least half of the diameter of the room, in this position symmetrical about the condition of the door will give you time to rescue higher than other conditions.

REFERENCES

Khisty, C.J. (1982), Pedestrian Cross Flows in Corridors, Transportation


QUALITY OF NURSING WORK LIFE AT HOSPITAL IN MAKASSAR

Nurmiati Muchlis1 and Ulfa Sulaeman2

1Program Study of Public Health, Faculty of Public Health, Universitas Muslim Indonesia, Jl. Urip Sumoharjo Km.05, Makassar 90231, South of Sulawesi, Indonesia
Student of Program Doctoral, Universitas Airlangga

2Program Study of Public Health, Faculty of Public Health, Universitas Muslim Indonesia, Jl. Urip Sumoharjo Km.05, Makassar 90231, South of Sulawesi, Indonesia
Student of Program Doctoral, Universitas Airlangga

Corresponding author:
Email: nurmi_marsfkm@yahoo.com; Mobile: +62-081242196953

ABSTRACT

One of the important issues regarding the management of human resources hospital can be inferred from the existence of several hospitals that experienced nursing staff turnover rate at which increases every year. Though nursing personnel are the most professional personnel in hospitals, so its presence is essential to the effectiveness of hospital services. The aim of this study was to analyze the influence of Quality of Nursing Work Life to the intention to leave the nursing staff of Hospitals in Makassar.

The population was the whole nursing staff in Makassar Islam Faisal and Haji Hospital. Design of the research is a quantitative with cross sectional design, using a survey method. The results of study explained that Dimensional Work-life home life is negatively significant effect on the intention to exit the nursing personnel. The less satisfied nursing staff, it tends to be intending to get out of the hospital. Dimensional design work, dimensions work context and Work world dimensional does not significantly affect to intention to leave.

For the hospital management is expected to arrange job schedule nursing staff to adjust to the characteristics of nursing personnel.

Keywords: Quality of Nursing Work Life, Intention to Leave

INTRODUCTION

Growth hospital in quantity has increased significantly. Health ministry data shows that the number of hospitals in Indonesia has reached 1,959 units in May 2012. That number could continue to grow in line with economic development. Every year there can be a 100-unit hospital opened. The opening of the new hospital depends on the development of an area, the availability of medical personnel, investors, and market share (Kompas.com, Friday (20/07/2012)).

The same thing happened in Eastern Indonesia (KTI), precisely the opening of the hospital is increasing, mainly managed by private parties. Makassar is a city in South Sulawesi which has the largest population. Not surprisingly, if it has a number of hospital other than the county or city. There are 56.25% of all hospitals in the city of Makassar owned by private parties (Muchlis, 2014). Although in terms of quantity, the number of hospitals managed by the private sector is increasing, but not fully followed by advances in quality. Particularly on the availability of an adequate number of professionals in every hospital.

Turnover is defined as a voluntary resignation (voluntary) or volunteer of an
organization (Robbins, 2003). The resignation of a high result in increased costs of recruitment, selection and training. In addition, the high level of resignation can interfere with the efficiency of the management company if knowledgeable and skilled personnel away so a replacement must be found and prepared to resume the position of such responsibility.

According to Earl (1992), turnover can be classified into six (6) categories which are external turnover, internal turnover, voluntary turnover, involuntary turnover, functional turnover and turnover dysfunctional. One of the important issues regarding the management of human resources hospital can be inferred from the existence of several hospitals that experienced nursing staff turnover rate at which increases every year. Though nursing personnel are the most professional personnel in hospitals, so its presence is essential to the effectiveness of hospital services.

The nurse is the only profession in the highest, and its presence is required for long periods in hospital (Brooks and Anderson, 2005). Characteristics typical nurse in the hospital, need critical attention, because of the characteristics of different professions, it will produce a different organizational behavior, so the need to approach the special theory related to nursing. Currently there are theories related to nursing that can be used to measure the quality of work life of nurses or nursing staff, the Quality of Nursing Work Life (QNWL) developed by Brooks and Anderson (2005). This study adopts the theory to increase the possibility of developing a research model that influence the intention to exit the nursing personnel. The methods used in the studies described below.

MATERIAL & METHOD

This research is an analytic study using survey method with cross sectional study. The sample consisted of 61 nurses and midwives with non-permanent status in the RS X and RS Y at Makassar City in 2016. The data was collected using questionnaires to measure Quality of Nursing Work Life of the Intention to Leave. Sampling method in this study is proportional random sampling. Four Dimensions of the Conceptual Framework with Related Instrument Items from Brooks and Anderson (2005).

Work Life/Home Life dimension defined as the interface between the life experiences of nurses in their place of work and in the home. Instrument items; “I am able to balance work with my family needs”, “I am able to arrange for child-care when I am at work”, “I have energy left after work”, “I feel that rotating schedules negatively affect my Life”, “My organization’s policy for family-leave time is adequate”, “I am able to arrange for day care for my elderly Parents”, “I am able to arrange for day care when my child is ill”.

Work Design dimension defined as the composition of nursing work and describes the actual work nurses do. Instrument items; “I receive a sufficient amount of assistance from unlicensed support personnel”, “I am satisfied with my job”, “My workload is too heavy”, “I have autonomy to make patient care decisions”, “I perform many non-nursing tasks”, “I experience many interruptions in my daily work routine”, “I have enough time to do my job well”, “There are enough RNs in my work setting”, “I am able to provide good quality patient care”, “I receive quality assistance from unlicensed support personnel”.

Work Context dimension defined as the practice settings in which nurse’s work and explores the impact of the work environment on both nurse and patient systems. Instrument items; “I am able to
communicate well with my nurse manager/supervisor”, “I have adequate patient care supplies and equipment”, “My nurse manager/supervisor provides adequate supervision”, “Friendships with my co-workers are important to me”, “My work setting provides career advancement opportunities”, “I feel like there is teamwork in my work setting”, “I feel like I belong to the “work family”, “I am able to communicate with other therapists (physical, respiratory, etc.)”, “I receive feedback on my performance from my nurse manager/supervisor”, “I am able to participate in decisions made by my nurse manager/supervisor”, “I feel respected by physicians in my work setting”, “The nurses' lounge/break-area/locker room in my setting is comfortable”, “I have access to degree completion programs through my work setting”, “I receive support to attend inservices and continuing education programs”, “I communicate well with the physicians in my work setting”, “I am recognized for my accomplishments by my nurse manager/supervisor”, “Nursing policies and procedures facilitate my work”, “I feel the security department provides a secure environment”, “I feel safe from personal harm (physical, emotional, or verbal) at work”, “I feel that upper-level management has respect for nursing”.

**Work World dimension** defined as the effects of broad societal influences and changes on the practice of nursing. Instrument items; “I believe that, in general, society has the correct image of nurses”, “My salary is adequate for my job given the current job market conditions”, “I would be able to find the same job in another organization with about the same salary and benefits”, “I feel my job is secure”, “I believe my work impacts the lives of patients/families.

**RESULT**

The results showed that the nursing staff in the two (2) research sites are dominated by women nursing personnel. This is also consistent with this case study in accordance with the number of female nursing students in Makassar also dominated by female students (Muchlis, 2014).

Nursing staff between the ages of 20-25 years more than other age groups. It is also supported by data tenure nursing staff are mostly relatively new (1-5) years. The education level of most of the nursing staff D3 (65.57%). Although there is still no in RSU Y is the level of education D2. Though a nurse can be said that the education of professional nurses D3. In the second study site is dominated by the nursing staff nursing personnel who are married (62.3%). This is in line with the results of interviews with the hospital, that one of the reasons nursing personnel out or resigned for reasons follow their husbands.

**Effects of Dimensions QNWL (Work-life home-life, Work design, Work context, Work world) to intention to leave**

We have told before that the test results of logistic regression between four (4) dimensions QNWL (Work-life home-life, Work design, Work context, Work world), explained that only Work-life home-life that showed a negative effect on intention to exit nursing personnel. This means that those who have low levels of satisfaction on the dimensions Work-life home-life (balance between the life of nursing personnel in the workplace with life at home), tend to have intention to get out of the hospital. Fishbein, M. & Ajzen, I. (1975) states that those who have the intention, will likely continue in the form of behavior. The explanation can be seen in Table 1.

Based on the statistical test results in Table 1, among four dimensions build QNWL to the intention to leave the
nursing staff, only Work-life home-life that showed negatively significant effect (p=0.011), α<0.05. As for the Work-dimensional design did not significantly affect the intention to quit (p=0.651), α>0.05, so do the work context (p=0.157); α>0.05, and the dimensions of the world of work (p=0.313); α>0.05.

Table 1. Results test of QNWL Dimensions to Intention to Leave in Hospital X and Y

<table>
<thead>
<tr>
<th>No.</th>
<th>Variables</th>
<th>Beta (β)</th>
<th>p (value)</th>
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<tbody>
<tr>
<td>1</td>
<td>Work-life home-life</td>
<td>-1.855</td>
<td>0.011</td>
</tr>
<tr>
<td>2</td>
<td>Work design</td>
<td>0.276</td>
<td>0.651</td>
</tr>
<tr>
<td>3</td>
<td>Work context</td>
<td>-0.912</td>
<td>0.157</td>
</tr>
<tr>
<td>4</td>
<td>Work world</td>
<td>-0.592</td>
<td>0.313</td>
</tr>
</tbody>
</table>

Based on the details of the level of satisfaction on the dimensions of work-life home-life nursing staff, most are not satisfied with the turnaround work schedules, which have an impact on their personal lives. Dissatisfaction with work schedules that are not balanced with the needs of the life of nursing personnel will certainly be at odds with the professional demand as a nurse, which according Sabarguna (2011) that in the hospital at least 50% of the workforce in the hospital must work full-time basis. In addition, the nursing staff is a profession that most intention to communicate with the patient, so that the physical existence is needed.

In carrying out the task of professionalism in the hospital, one of the important characteristics that embody the specificity and complexity of the RS according Sabarguna (2011) namely; lasts 24 hours a day throughout the year. The needs of the time for personal needs, is also triggered, because of the status of nursing personnel are mostly married, so also will stimulate demand for family time. Price & Mueller. (1981) found that the high work schedule, and the amount of training, and rewards associated with the low value of the thought of leaving employment, seeking employment and turnover. Results of research Samad (2008) also showed that job satisfaction in working time, negatively significant effect on the desire to seek employment elsewhere.

It turns out there are differences in the management of human resource management at both hospitals. Similarly, the type of employment status to the two hospitals are also different. At the hospital X, since June 2016 a change in the status of volunteers and honorary become contract workers. Similarly, there are differences in the compensation provided to each hospital. Of course, different resource management would lead to differences in the level of satisfaction in each of the dimensions that make up QNWL.

**DISCUSSION**

Dimensional Work-life home life is negatively significant effect on the intention to exit the nursing personnel. The less satisfied nursing staff, it tends to be intending to get out of the hospital. Dimensional design work does not significantly affect the intention to exit the nursing personnel. Dimensions work context does not significantly affect the intention to exit the nursing personnel. Work dimensional world does not significantly affect the intention to exit the nursing personnel.

Preferably the instruments used must be in accordance with the characteristics and conditions that exist on the respondent, so the measurement results to be right. In addition, there should be appropriate observations to the respondent in conducting interviews to avoid the respondents who are not honest in answering. The results of this study do not fully comply with the theory of Brooks and Anderson (2005), in which all the dimensions of the Work-life home-life, Work design, context Work and Work
world in a positive effect on job satisfaction, which ultimately will reduce turnover. It due to the characteristics of different research nurses and research sites are quite different. Therefore, further study on QNWBL needs to be done by adding some variables that can address the cause of high intention out on nurses and midwives.

**CONCLUSION**

It is expected that the foundation provides the infrastructure that supports the nursing staff in order to carry out its function as a person who also has family responsibilities, such as a rest area that allows for caring for the child at recess. Policies like setting job schedule nursing staff to adjust the characteristics of the nursing staff, nursing staff who have responsibility for the care of the family (marital status), given the work schedules more flexible than the nursing staff who still do not have a higher responsibility, asking the consent of the other employees, taking into account the personal needs of nursing staff, to include them in the discussion of the agenda, such as setting work schedules more flexible.

For further research in order to increase and develop the other variables in the study such as job satisfaction in general to the intention to leave. Respondents are not only devoted to the nursing staff, but also other professions in the hospital. In addition, it is also necessary to evaluate the performance of personnel directly involved supervisors to nurses and midwives. A good relationship between nurses and midwives with supervisors can increase job satisfaction resulting in lower intention to leave.

**REFERENCES**


MAPPING FOR READINESS OF PUBLIC HEALTH CENTER IN LUMAJANG TO PERFORM THE NATIONAL HEALTH INSURANCE PROGRAMME

Nuryadi

Faculty of Public Health, University of Jember
No. 37 Kalimantan Street, Jember 68121
Email: nuryadi.169@gmail.com

ABSTRACT

Public Health Center (PHC) as one of the first level health care facilities at The National Health Insurance (NHI) is the gate keeper in health care. The purpose of this study is to describe the mapping for readiness of Public Health Center in Lumajang to perform NHI programme based on 2013’ Public Health Center standart, and the readiness of Public Health Center based on results of self assessment of the Public Health Center accreditation.

This research is quantitative descriptive research. The analysis unit of this study are 25 Public Health Center in Lumajang for readiness at program of NHI based on 2013’ Public Health Center standart, and it is 4 Public Health Center for readiness perform NHI programme based on the results of self assessment. The results showed that ten standard were well and was appropriate with 2013’ Public Health Center standart; nine standard were less and enough, and not according to 2013’ Public Health Center standart; Jatiroto and Candipuro Public Health Center in Lumajang based on Public Health Center accreditation standards were not meet to the criteria for the basic accreditation.

We can conclude that the readiness of Public Health Center in Lumajang to perform NHI programme based on Public Health Center standard were enough and less, and not according to 2013’ Public Health Center standart; and the readiness of Public Health Center based on Public Health Center accreditation standards were not appropriate with provisions of the Ministry of Health because they were not meet to the criteria for the basic accreditation.

Keywords: PHC Readiness, Standard, Accreditation, The National Health Insurance

INTRODUCTION

The government formed a National Social Assurance System (NSAS) on the basis that everyone is entitled to social assurance to be able to meet the eligible basic needs life and improve dignity towards the realization of Indonesian society that is prosperous, and fair (Indonesia, 2004). Social assurance programs include: health insurance, accident insurance, old age insurance, pension insurance, and death insurance. In Indonesia, the National Health Insurance (NHI) is implemented and organized by the Social Assurance Administering Agency (SAAA) which became effective as of January 1, 2014.

The Public Health Center as one of the first level health care facility as gate keeper in the health service should be standardized and must be accredited periodically at least 3 years (East Java Provincial Health Office, 2013; Ministry of Health, 2014).

During the 4th months of the passage of NHI, evidently SAAA executive of NHI. Many internal and external factors of SAAA that must be addressed so membership services and cooperation with
Health Care Provider (HCP) can run well. The problem, the parallel improvement with quality service is difficult to realize. This condition affects higher dissatisfaction of member to SAAA and HCP. Member of NHI really a weak position between the two ruling parties of HCP and SAAA (Kompas, February 13th, 2014).

Based on the results of 23 Public Health Center self assessment in the Lumajang region collected at the health office that Public Health Center that have default values above 80% (good) by 8 Public Health Center (34.9%), i.e. Sukodono Public Health Centers, Jatiroto Public Health Centers, Penanggal Public Health Centers, Kedungjajang Public Health Centers, Rogotrunan Public Health Centers, Gucialit Public Health Centers, and Labruk Public Health Centers. While the Public Health Center that have default values below 80% (not both) of 15 health centers (65.2%) (Wahyuni, 2014). This indicates that most Public Health Center in Lumajang not yet reached the standard of 65.2% in 2014, and the question is "Is the Public Health Center is ready to run the program NHI".

Health Insurance is a guarantee in the form of health protection for member to benefit health care and protection to meet basic health needs are given to every person who has paid dues or dues paid by the government. NHI organized by a legal entity called SAAA-Health, which is a legal entity formed to hold Health Insurance program (Ministry of Health, 2013).

Public Health Center is a health care facility that organizes public health efforts and individual health efforts at first level, with more emphasis promotive and preventive efforts, to achieve the degree of public health the highest in its region (Ministry of Health, 2014). Standard of Public Health Center in 2013 consisted of 3, namely: standard management and administrative (operational management, and quality management), standard resources (buildings, energy, equipment, pharmaceutical services and medications, and financial), standard health efforts (health promotion, environmental health, health of both mother and child - family planning, community nutrition, prevention and eradication of the disease, treatment, emergency, dental treatment and dental, laboratory, hospitalization, emergency obstetric and neonatology) (East Java provincial health office, 2013).

Accreditation of Public Health Center is the recognition of the Public Health Center provided by independent institutions accredited providers appointed by the Minister after it is judged that the health center has met the standard of care health centers that have been established by the Ministry to improve the quality of Public Health Center services on an ongoing basis (Ministry of Health, 2014). Accreditation standards covering the administration and management of public health centers, Public Health Center program, and basic medical services (Kuswenda, 2013).

The purpose of this study is to describe the mapping of the readiness of the Public Health Center in Lumajang in NHI program based Standard of Public Health Center in 2013, and the readiness of Public Health Center based on the results assessment of the Public Health Center accreditation.

**MATERIAL & METHOD**

This research is a descriptive quantitative research. The unit of analysis of this study are 25 Public Health Center in the working area Lumajang. Respondents in this study is the section staff of primary health care of Health Office (1 person), head of Public Health Center (2 persons), and person in charge of Public Health Center programme activities.

The research variables include: mapping the readiness of Public Health
Center based on the standard of Public Health Center in 2013 (management and administration, resources, health services), readiness based on the assessment results of the Public Health Center accreditation (standard administration and management, health program, basic medical services).

Data collected through interviews and documentation, and presentation of data in tables and drawings (map). Analysis of the data for a standard of Public Health Center by calculating the total value of each sub standard and the total value of each Public Health centers, while the data analysis to the accreditation assessment is done by calculating the value of each chapter on the achievements of each of the standards and achievements of the final value of the 3rd standard.

RESULT & DISCUSSION

Readiness of Public Health Center in NHI Program Based Administration and Management Standards

There were 20 unit (80%) from 25 Public Health Center in Lumajang were in a good value (8-10) of the operational management standard of Public Health Center. Accordingly, this standard was in conformity with the standards of the Public Health Center in 2013. Conformity could be caused by most public Health Center had met parameters on the Public Health Center standard.

The quality management standards of Public Health Center showed that there were 16 unit (64%) from 25 Public Health Center in Lumajang were less than the value (<6). Thus, this standard had not been in accordance with the standards of Public Health Center in 2013. Mismatches that could be caused by most Public Health Center did not meet the standard parameters in the public health centers.

Readiness of Public Health Center in NHI Program Based Resources Standard

There were 13 unit (52%) from 25 Public Health Center in Lumajang were were enough and less in building standard. The workforce standard of Public Health Center showed that 17 unit (68%) from 25 Public Health Center in Lumajang were less and enough. Thus, both of these standard had not been in accordance with the standards of Public Health Center in 2013. Mismatches that could be caused by most Public Health Center did not meet the standard parameters in the public health centers.

Most of the equipment standard of the Public Health Center Lumajang was good value in the range of 4.8 to 6 as many as 14 unit (56%) of the 25 public health centers. Most of drug and pharmaceutical services standard of the Public Health Center in Lumajang was good with a value in the range of 4.8 to 6 as many as 14 unit (56%) of the 25 public health centers. Most of financial standards of the Public Health Center in Lumajang was good with a value in the range of 4.8 to 6 as many as 13 unit (52%) of the 25 public health centers. Accordingly, all of these standard was in conformity with the standards of the Public Health Center in 2013.

Readiness of Public Health Center in NHI Program Based Health Care Efforts Standard

Most of health promotion efforts standard of Public Health Center in Lumajang was sufficient and less as many as 17 unit (68%) of 25 public health centers. Most of environmental health efforts standard of Public Health Center in Lumajang was sufficient and less as many as 13 unit (52%) of 25 public health centers. Most of public nutrition improvement efforts standard of Public Health Center in Lumajang was sufficient and less as many as 14 unit (56%) of 25 public health centers. Most of disease prevention efforts standard of Public Health Center in Lumajang was sufficient
and less as many as 15 unit (60%) of 25 public health centers.

Most of laboratory efforts standard of Public Health Center in Lumajang was less and pretty much as 21 unit (84%) of 25 public health centers. Most of neonatology obstetric emergency efforts standard of Public Health Center in Lumajang was sufficient and less as much as 4 unit (66.67%) of 6 Public Health Center with Basic Emergency Neonatal Obstetric Care. Accordingly, all of these standard had not been in accordance with the standards of Public Health Center in 2013. Mismatches that could be caused by most Public Health Center did not meet parameters in the standards of public health centers.

Most of the Family Planning - Maternal and Child Health effort standards of Public Health Center in Lumajang was good value in the range of 26.72 to 33.52 as many as 19 unit (76%) of 25 public health centers. Most of the disease eradication efforts standard of Public Health Center in Lumajang was good value in the range of 5.69 to 7.14 as many as 15 unit (60%) of 25 public health centers. Most of the emergency treatment efforts standard of Public Health Center in Lumajang was good value in the range of 2.83 to 3.54 as much as 14 unit (56%) of 25 public health centers.

Most of the oral and dental treatment efforts standard of Public Health Center in Lumajang was good value in the range of 1.6 to 2 as much as 16 unit (64%) of 25 public health centers. Most of the in patient effort standards of Public Health Center in Lumajang was good value in the range of 1.6 to 2 as much as 13 unit (56.52%) of the 23 Public Health Center with in patient and Basic Emergency Neonatal Obstetric Care. Accordingly, all of these standard was in conformity with the standards of the Public Health Center in 2013. Compliance could be caused by most health centers had meet parameters in the standards of public health centers.

Mapping for Readiness of Public Health Center at Program of the National Health Insurance based the standards of the public health center

The overall condition of each Public Health Center in Lumajang in 2013 based on self-assessment could be seen in the map below.

The above picture shows that most of the readiness of Public Health Center in Lumajang standards based the standard of Public Health Center in the national health insurance program was insufficient and less as much as 19 in the range of 60-79 as much as 17 unit (68%), and health centers with less value in the range <60 as much as 2 unit (8%). While the health center with good value in the range of 80-100 as 6 health centers (24%). Thus, the standard of Public Health Center not in accordance with the standards of 2013. Mismatches that could be caused by most of Public Health Center not meet parameters in the standards of Public Health Center.

Readiness of Public Health Center at Program of the National Health Insurance based The assessment of the Public Health Center Accreditation

The results of the accreditation assessment in Jatiroto and Candipuro
Public Health Center in Lumajang was as follows:
The total point achievements of the accreditation standards of Jatiroto Public Health Center as much as 37.11%. And than, Achievements the total point of the accreditation standards of Candipuro Public Health Center as much as 29.01%. Achievement of the point of each chapter I, II, III as much as <75%, achievement of the point of each chapter IV, V, VI as much as <60%, and achievements of the point of each chapter VII and VIII as much as > 20% and chapter IX as much as <20%. While the accreditation decision of the lowest ratings were basic accredited, with criteria of the point achievements of chapters I, II, and III as much as ≥75%, and Chapter IV, V, VI as much as ≥60%, Chapter VII, VIII, IX as much as ≥20%. Thus point achievements for all of chapters only chapter VII and VIII that meet the criteria. So that means Jatiroto and Candipuro Public Health Center not meet criteria for basic accredited. Thus, the point achievement for accreditation of Jatiroto and Candipuro Public Health Center not in accordance with the provisions of the Minister of Health. The discrepancy was caused by the unmeet with the accreditation standards.

Table 1. Achievements of Accreditation at Jatiroto and Candipuro Public Health Center in Lumajang, 2014.

<table>
<thead>
<tr>
<th>No.</th>
<th>Chapter</th>
<th>Jatiroto Public Health Center</th>
<th>Candipuro Public Health Center</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total Score</td>
<td>Makse. P Score</td>
</tr>
<tr>
<td>1</td>
<td>I. Penyelenggaraan Pelayanan Puskesmas (PPP)</td>
<td>250</td>
<td>590</td>
</tr>
<tr>
<td>2</td>
<td>II. Kepemimpinan dan Manajemen Puskesmas (KMP)</td>
<td>280</td>
<td>900</td>
</tr>
<tr>
<td>3</td>
<td>III. Peningkatan Mutu Puskesmas (PMP)</td>
<td>35</td>
<td>320</td>
</tr>
<tr>
<td></td>
<td>Standar Program Puskesmas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>IV. Program Puskesmas yang Berorientasi Sasaran (PPBS)</td>
<td>150</td>
<td>530</td>
</tr>
<tr>
<td>5</td>
<td>V. Kepemimpinan dan Manajemen Program Puskesmas (KMP).</td>
<td>290</td>
<td>1020</td>
</tr>
<tr>
<td>6</td>
<td>VI. Sasaran Kinerja dan MDGs. (SKM).</td>
<td>180</td>
<td>460</td>
</tr>
<tr>
<td></td>
<td>Basic Medical Service Standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>VII. Layanan Klinis yang Berorientasi Pasien (LKPP).</td>
<td>870</td>
<td>1410</td>
</tr>
<tr>
<td>8</td>
<td>VIII. Manajemen Penunjang Layanan Klinis (MPLK).</td>
<td>530</td>
<td>1290</td>
</tr>
<tr>
<td>9</td>
<td>IX. Peningkatan Mutu Klinis dan Keselamatan Pasien (PMK).</td>
<td>50</td>
<td>580</td>
</tr>
<tr>
<td></td>
<td>SKOR TOTAL &amp; SKOR MAKSIMUM E.P</td>
<td>2635</td>
<td>7100</td>
</tr>
</tbody>
</table>

| Public Health Center Achievement | 37.11% | 2.01% |

Source: Primary Data, 2014

CONCLUSIONS & RECOMMENDATIONS

The conclusion of the standards assessment and achievement for accreditation point of Public Health Center as follows:
1) Readiness of Public Health Center in Lumajang in the national health insurance program based on operational management standard,
equipment standard, drug and pharmaceutical services standard, financial standards, the Family Planning - Maternal and Child Health effort standards, the disease eradication efforts standard, the treatment effort standard, the emergency treatment efforts standard, the oral and dental treatment efforts standard, and inpatient efforts standard was good and accordance with the standards of Public Health Center in 2013

2) Readiness of Public Health Center in Lumajang in the national health insurance program based on the quality management standards, building standards, standards for personnel, standards of health promotion efforts, environmental health efforts standards, standard of public nutrition improvement efforts, disease prevention efforts standard, laboratories efforts standards, and neonatology obstetric emergency efforts standard was lacking and or insufficient, and not according to the standards of Public Health Center in 2013

3) Overall, the readiness of Public Health Center in Lumajang in the national health insurance program based on a standard of Public Health Center was sufficient and less, and not according to the the standards of Public Health Center in 2013

4) Readiness of Jatiroto and Candipuro Public Health Center of Lumajang in the national health insurance program based on accreditation standards of Public Health Center was not in accordance with the provisions of the Ministry of Health because it had not met the criteria for basic accredited.

Based on the results and discussion and conclusions above, there were some suggestions for improvements and enhancements, among others:

1) Public Health Center in Lumajang should improve to the quality management standards, building standards, standards for personnel, standards of health promotion efforts, environmental health efforts standards, public nutrition improvement efforts standards, disease prevention efforts standards, laboratories efforts standards, and neonatology obstetric emergency efforts standard, specially its score of 1 and 0 with development of the building, infrastructure, and technical with direction and guidance by Lumajang District Health Department.

2) Lumajang Health Department verify each Public Health Center to the operational management standard, equipment standard, drug and pharmaceutical services standard, financial standards, the Family Planning - Maternal and Child Health effort standards, the disease eradication efforts standard, the treatment effort standard, the emergency treatment efforts standard, the oral and dental treatment efforts standard, and inpatient efforts standard was good and accordance with the standards of Public Health Center in 2013

3) Jatiroto and Candipuro Public Health Center in Lumajang improve to all accreditation standards of Public Health Center (except, chapter VII: patient-oriented clinical services, and chapter VIII: the supporting management of clinical services)

4) Lumajang Health Department conducted a self-assessment for the point achievements of accreditation standards for all Public Health Center in Lumajang to find a picture of overall ability, and to provide guidance or assistance to all Public Health Center can meet the standards of accreditation

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Lumajang Tahun 2012. Lumajang : Dinkes Kabupaten Lumajang
THE ROLE OF SOCIAL SUPPORTS IN ORDER TO REDUCING MATERNAL AND INFANT MORTALITY IN SURABAYA

Nyoman Anita Damayanti*, Ratna Dwi Wulandari1, Nuzulul Kusuma Putri1, Nurhasmadiar Nandini1, Darmawan Setijanto2

1Faculty of Public Health, Airlangga University, Surabaya
2Faculty of Dentistry, Airlangga University, Surabaya
Corresponding author: nyoman.fkmua@gmail.com

ABSTRACT

Maternal and infant mortality is one of the health problems that continues to be an issue in Indonesia. Surabaya is one of the city in Indonesia with high maternal mortality (38 cases on 2015) and infant mortality case (282 cases on 2015). One of the indirect efforts to reducing maternal and infant mortality is increasing social supports towards pregnant woman. Social supports can achieves from closest family, relatives, neighbors, or another people around mother and baby.

GELIAT UNAIR (GERakan peduLi Ibu dan Anak sehA Universitas Airlangga) utilize this method to accelerate reducing maternal and infant mortality in Surabaya. By empowering students of Airlangga University in assisting the pregnant women until giving birth, can help increase social supports for mothers since their pregnancy until after they gives birth. Social supports given by the students expected can help reduce maternal anxiety, facilitate access of mothers to obtain information related to pregnancy and infant health, and may provide an encouragement to the mothers to maintain the mothers and their babies health.

This program carried out since 2015 towards the mothers in 6 Public Health Centers in Surabaya. Until 2016, the volunteers of GELIAT UNAIR already assist 165 pregnant women and 132 of them already giving birth safely. Good and appropriate social supports effective to decrease the maternal and infant mortality. Hopefully this program can continue to be conducted and duplicated thoroughly in Surabaya, as well as in other areas throughout Indonesia.

Keywords: Geliat Unair, Maternal and Infant Mortality, Social Supports

INTRODUCTION

Maternal and infant mortality is one of the health problems that continue to be an issue. Reducing maternal and infant mortality is one of the international community’s priorities and also the target of MDGs and SDGs. Indonesia is one of the countries with high maternal and infant mortality. Based on the Indonesia Health Demography Survey in 2012, Indonesia maternal mortality rate was 359/100.000 living birth and for the infant mortality rate was 23/1000 living birth.

East Java is one of the provinces in Indonesia that has high maternal and infant mortality rate, and Surabaya is the city with the highest maternal and infant mortality case in East Java. Infant mortality case in Surabaya keep increasing since 2013, meanwhile the maternal mortality case keeps decreasing. However, Surabaya is one of the cities in East Java with high maternal mortality (38 cases on
2015) and infant mortality case (282 cases on 2015).

Table 1. Infant and Maternal Mortality Cases in Surabaya on 2013 - 2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Infant mortality case</th>
<th>Maternal Mortality Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>254</td>
<td>49</td>
</tr>
<tr>
<td>2014</td>
<td>243</td>
<td>39</td>
</tr>
<tr>
<td>2015</td>
<td>282</td>
<td>38</td>
</tr>
</tbody>
</table>

Source: Health Department of Surabaya City, 2016

Maternal and infant mortality caused by many factors, direct and indirect factors, so that the effort to reducing maternal and infant mortality should be approaching both sides. The direct factors are related to the medical purpose and the indirect factors are related to the social or cultural factors. One of the indirect causes that can affect mothers’ and babies’ health are maternal stress and anxiety. One of the efforts to solve those problems is increasing social supports towards pregnant woman.

Social supports can achieve from closest family, relatives, neighbors, or another people around mother and baby. The effort to reducing maternal and infant mortality can come from various people or institution around mothers. The one can help in reducing maternal and infant mortality not only from health organization or health professional, but also from the family, community leader, society around mothers, education institution, and else.

Airlangga University as one of the education institution in Surabaya joined with UNICEF, Surabaya District Health Office, East Java Provincial Health Office, Airlangga University Hospital, Dr. Soetomo General Hospital, and several health professional organization conducted a voluntary program GELIAT UNAIR (GErakan peduLi Ibu dan Anak sehaT Universitas Airlangga) to help reducing maternal and infant mortality especially in Surabaya. This program involving all the members of Airlangga University such as lecturers, students of undergraduate program, master program, doctoral program, and also academic staffs from various faculties. The objective of this program was to contribute in acceleration of reducing maternal and infant mortality in Surabaya.

**MATERIAL & METHOD**

GELIAT UNAIR is a voluntary community service program that involving the academic community of Airlangga University. The method of this program was by doing the community services by build social supports to empower pregnant woman and their family. One of the activities in the program is assisting mothers and babies by students of Airlangga University. By empowering students of Airlangga University in assisting the pregnant women until giving birth can help increase social supports for mothers since their pregnancy until after they gives birth. The students were from various degrees, faculties and programs in Airlangga University. These students applied voluntarily to join this community service program.

Social supports given by the students expected can help reduce maternal anxiety, facilitate access of mothers to obtain information related to pregnancy and infant health, and may provide an encouragement to the mothers to maintain theirs’ and their baby health. This program carried out since 2015 towards 165 mothers in 6 Public Health Center in Surabaya.

The supports given could be in any way according to the mothers’ needs. To be able provide these supports, the volunteer must join a capacity building program to learn the general knowledge related to mother’s and baby’s’ health. Besides, there also supervisors for the volunteers that have more knowledge and experience related to mother’s and baby’s
health such as midwives, doctors, obstetrician and gynecologist specialists, and many more.

RESULT

Since middle of 2015 until 2016 the volunteers of GELIAT UNAIR already assist 165 pregnant women with low risk or higher risk of pregnancy, and 132 of them already giving birth safely. The rest of them couldn’t detect because they went back to their hometown and lost contact with the volunteers. The volunteers didn’t just stop when the mothers already giving birth. But they also make sure that the mothers give breastfeeding to the babies and remind and give information related to the vaccination for their babies.

One of the activities in the program is assisting mothers and babies by students of Airlangga University. By empowering students of Airlangga University in assisting the pregnant women until giving birth can help increase social supports for mothers since their pregnancy until they give birth. Social supports given by the students expected can help reduce maternal anxiety and help mothers to overcome their stress related to their pregnancy and their life as a mother.

DISCUSSION

Social supports refer to the availability of interpersonal to provide belonging, self-esteem, appraisal and tangible aid. There are three basic classes of relationship functions related to social supports, help or assistance, companionship and intimacy, and the social regulation of individual behavior. Some research indicated that social supports is compulsory to be given to the mothers since their pregnancy phase.

Mothers’ perceived stress and social supports were found to be significant predictors of maternal attitudes and the quality of interaction with their infants. The quality of infants’ interactive behavior was also affected by maternal stress and supports (Crnic et al., 1984).

Based on the research, found that prenatal social supports are associated with infant birth weight through process involving fetal growth. Behavioral and biological factors may contribute to the association between supports and fetal growth. Several studies also suggest that particulars members of a woman’s social network may be important in providing social supports during pregnancy. Social supports in pregnancy also suggest generally positive effects of supports on the primary indicators of newborn health, such as infant birth weight and gestational age (Feldman et al., 2000).

Based on those researches, social supports showed positive influences towards pregnancy and infant’s health. Social supports not only can be given by the closest family member of the pregnant mothers, but it also can be given from everyone else in the community. By increasing the social supports, it can help the mothers to stay healthy and also giving birth safely.

CONCLUSION

Good and appropriate social supports effective to decrease the maternal and infant mortality. This study suggested that multiple forms of supports from closest family member, health worker, friends or everyone around pregnant mothers are needed. Hopefully this program can continue to be conducted and duplicated thoroughly in Surabaya, as well as in other areas throughout Indonesia.

REFERENCES


ABSTRACT

Barotrauma tympanic membrane is the structural damage of tissue and its sequel. The previous research found 39.7% incidence of Barotrauma tympanic membrane. The aim of research is to prove the effect of multiple internal and external factors on the incidence of barotrauma traditional diver tympanic membrane. Cross sectional study reinforced by in-depth interview. 130 respondents from two groups of divers traditionally had taken proportionally stratified random sampling. Research instruments structured questionnaires and interviews. Data analysis of univariate, bivariate, and multivariate

The variables that proved to be a risk factor in the group of breath hold divers are scavengers coin speed down divers ≥ 18 meters per minute RP=17.963; 95% CI=1.562 to 206; p=0.012 and don’t use the tools of diving RP=9.600; 95% CI=1.471 to 62.652; p=0.018, while the air compressor divers significant variable is the age old diver adults ≥37 years of RP=6.524; 95% CI=1.268 to 33.559; p=0.025 variables that were not evident in the traditional group of divers hold breath scavengers coins and the air compressor is the body mass index, length of work, education level, knowledge SOP dive safety, speed down ≥18 meters per minute, it is not evident only in the group of breath hold divers, scavengers coins while older adults ager divers proved only in the group of divers air compressor.

Several factors influencing barotrauma tympanic membrane in the group of traditional divers, who hold their breath for coins were speed down ≥18 meter per minute and don’t use the tools of diving with a probability of 99%, whereas in the group air compressor is 37 years of age with a probability of 98%.

Keywords: Traditional Divers, Barotrauma Tympanic Membrane, Risk Factor

INTRODUCTION

Indonesia is an island with a long coastline of 95,181 km². Spacious two-thirds of its sovereignty vast sea waters around 3,272,000 km². With the amount of 13,466 islands spread from Sabang to Merauke. The sea is a source of abundant natural resources so that the necessary human resources particularly skilled in the field of marine dives. Ocean other than as a transportation hub, a tourist attraction as well as a source of community livelihoods harbor, coastal and Island areas.

Community livelihood harbor, coastal and island is a traditional diver fisherman. People in the neighborhood ferry ports depend on the ship work as manual labor, port worker, and also as well as traditional divers hold your breath. The majority of traditional diver has never participated in education and training dives formally because of social-ization from authorities. Traditional fisher-man and divers traditional generally do dive hold breath and use tools scuba air compressor. Divers work traditionally had a very high level of risk to health and safety so in need of knowledge and skills dives right. Carelessness in dives can result in rupture of the tympanic membrane barotrauma or impact on the hearing threshold.
Barotrauma tympanic membrane is the structural damage to tissue and sequel caused by the inability to equate changes in air pressure in the middle ear cavity with the surrounding environment. Barotrauma tympanic but when frequently or repeatedly over long periods can result in irreversible.\(^{6,7}\)

The data show that the incidence of Barotrauma tympanic membrane in America for military dives at (0.026%), recreational divers underwater at (0.034%) and commercial diver (0.36%) annually.\(^8\)

Data collected directorate. Sepim. Public health. Dep. Case. R.I of 10 provinces by 2008. There were 1,028 traditional diver who interviewed found directly in clinical symptoms as the disease with 93.9% dive, consisting of mild hearing loss to deafness 39.7%.\(^9\)

Studies conducted by Arief (2011) on traditional fishing air compressor divers showed the incidence of barotrauma tympanic membrane with a long depth of divers and dive for 32.43% and does not occur barotrauma tympanic membrane of 67.56%.\(^{10}\)

Traditional divers hold breath scavengers coins and an air compressor majority complained of ear pain. And discharge to hearing loss. The traditional divers allegedly dominated child-ren to elderly adults from the village of Ketapang and Bangsring. The sea is their livelihood in addition to the port of Ketapang in Banyuwangi as a source of additional income for the purposes of daily necessities, the entrance area sub-district Kalipuro Banyuwangi regency.\(^{11}\)

Preliminary studies carried out on traditional divers in Ketapang village and Bangsring Banyuwangi, obtained interviews on traditional divers 30 divers illustrates that 13 (43.3%) earache, 8 divers (26.7%), joint pain, 6 divers (20%) and 3 divers sore eye (10%), dizziness.

**MATERIAL & METHOD**

This kind of research is observational analytic with cross sectional study design and supported with qualitative approach through in-depth interview.\(^{12}\) This study aimed to explore the influence of the independent variables to perform instant-neous measurement. Traditional diver inspection is done after observation and measurement moment.\(^{13}\)

Population study of all traditional divers hold breath scavengers coins and air compressor in villages Bangsring and Ketapang Banyuwangi regency. A large sample of 130 divers need of both groups, stratified method used proportional random sampling by means of random sampling in which every traditional diver who met the inclusion criteria included in the study sample so that the minimum total sample fulfilled. In-depth interview carried out on 10% of both groups traditional divers who live in the two villages.

The dependent variable in this study is barotrauma tympanic membrane while the independent variables are age divers, body mass index (BMI), duration of work, educational level diver, dive safety SOP knowledge level, the frequency of dives, speed down \(\geq 18\) meters per minute, the speed of rise \(\geq 18\) meters minute, diving depth, diving tools, and earnings divers.

**RESULT**

Distribution group traditionally more divers on breath hold divers scavengers coin (50.8%) compared to the air compressor divers (49.2%). The age distribution of traditional divers hold breath scavengers coins in the port of Ketapang Banyuwangi average is 17.5 years, the youngest is 12 years old and the oldest 45 years of age compared to the air compressor divers mean age of 37 years with the youngest 24 and the oldest 48 years of age.
BMI traditional distribution divers hold breath scavengers coins and divers air compressor majority of normal BMI. Length of work traditional distribution divers hold breath scavengers coins in the port of Ketapang Banyuwangi the average is 5.5 years, the new work 2 years old and 22 years old work than the average diver air compressor 8 years, the new work 3 years old and 23 years old work.

The majority of traditional divers hold breath scavengers coins and divers air compressor is educated graduate Primary school (SD) while the percentage of junior-high school level is roughly level. Type of barotrauma tympanic membrane in a traditional divers hold breath scavengers coins and divers air compressor is middle ear barotrauma. The majority of the degree of barotrauma tympanic membrane in traditional divers hold breath scavengers coins and divers air compressor is the degree of 0. It can be seen in the table 1.

Table 1. Characteristics of the Research Subjects

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Divers hold breath Scavengers</th>
<th>Air compressor divers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N %</td>
<td>N %</td>
</tr>
<tr>
<td>Group of divers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hold breath</td>
<td>66 100</td>
<td>- -</td>
</tr>
<tr>
<td>Air compressor</td>
<td>- -</td>
<td>64 100</td>
</tr>
<tr>
<td>Ages divers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;12 – 20 years</td>
<td>33 50.0</td>
<td>0 0</td>
</tr>
<tr>
<td>21 – 30 years</td>
<td>30 45.5</td>
<td>14 21.9</td>
</tr>
<tr>
<td>31 – 40 years</td>
<td>2 3.0</td>
<td>36 56.2</td>
</tr>
<tr>
<td>41 – 50 years</td>
<td>1 1.5</td>
<td>14 21.9</td>
</tr>
<tr>
<td>Body mass index</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight (&gt;18.5 kg/m²)</td>
<td>28 42.4</td>
<td>7 10.9</td>
</tr>
<tr>
<td>Normal (≥ 18.5-22.9 kg/m²)</td>
<td>30 45.4</td>
<td>20 31.2</td>
</tr>
<tr>
<td>Overweight (&gt;23 kg/m²)</td>
<td>4 6.1</td>
<td>8 12.5</td>
</tr>
<tr>
<td>At Risk (23.0-24.9 kg/m²)</td>
<td>2 3.0</td>
<td>5 7.8</td>
</tr>
<tr>
<td>Obese I (25-29.9 kg/m²)</td>
<td>2 3.0</td>
<td>14 21.9</td>
</tr>
<tr>
<td>Obese II (30.0 kg/m²)</td>
<td>0 0</td>
<td>10 15.6</td>
</tr>
<tr>
<td>Length of work criteria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-5 years</td>
<td>33 50.0</td>
<td>18 28.1</td>
</tr>
</tbody>
</table>

Bivariate analyzes intended to determine the value of the relationship and prevalence ratio (RP) with dependent variable incidence of barotrauma tympanic membrane of the significance level of 95%. The full distribution of risk factors in a group of divers hold breath scavengers coins can be seen in table 2.

Table 2. Distribution of Risk Factors for The Incidence of Barotrauma Tympanic Membrane in Divers Groups Hold Breath Scavengers Coins

<table>
<thead>
<tr>
<th>No</th>
<th>Variable</th>
<th>p</th>
<th>RP</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adult age old diver (≥17.5 years)</td>
<td>0.140</td>
<td>2.367</td>
<td>0.882</td>
<td>6.354</td>
</tr>
<tr>
<td>2</td>
<td>BMI diver is not normal (&lt;18.5 and &gt;22.9 kg/m²)</td>
<td>0.216</td>
<td>0.476</td>
<td>0.178</td>
<td>1.277</td>
</tr>
<tr>
<td>3</td>
<td>Length of work diver ≥ 5.5 years</td>
<td>0.622</td>
<td>1.440</td>
<td>0.546</td>
<td>3.795</td>
</tr>
</tbody>
</table>
Table 3. Distribution of Risk Factors for the Incidence of Barotrauma Tympanic Membrane in Divers Group of Traditional Air Compressor

<table>
<thead>
<tr>
<th>No</th>
<th>Variable</th>
<th>p</th>
<th>RP</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>95% CI Lower</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>95% CI Upper</td>
</tr>
<tr>
<td>4</td>
<td>Low levels of diver education (SD – SMP)</td>
<td>1.000</td>
<td>0.492</td>
<td>0.385 – 0.630</td>
</tr>
<tr>
<td>5</td>
<td>SOP knowledge is not good dive safety (score &lt; 66)</td>
<td>&lt;0.0001*</td>
<td>0.102</td>
<td>0.029 – 0.356</td>
</tr>
<tr>
<td>6</td>
<td>The frequency of dives often (each day of working)</td>
<td>0.063</td>
<td>4.348</td>
<td>0.072 – 17.629</td>
</tr>
<tr>
<td>7</td>
<td>Speed down the depth ≥ 60 feet</td>
<td>0.003*</td>
<td>10.075</td>
<td>2.052 – 49.469</td>
</tr>
<tr>
<td>8</td>
<td>Speed surfaced ≥60 feet</td>
<td>0.613</td>
<td>2.065</td>
<td>0.372 – 11.465</td>
</tr>
<tr>
<td>9</td>
<td>Depth of dives ≥5 meters</td>
<td>0.053</td>
<td>0.459</td>
<td>0.350 – 0.603</td>
</tr>
<tr>
<td>10</td>
<td>Do not use the tools of diving (mask, snorkel, and fins)</td>
<td>0.010*</td>
<td>4.781</td>
<td>1.564 – 14.616</td>
</tr>
<tr>
<td>11</td>
<td>Low income diver (&lt;1,240,000/month)</td>
<td>0.007*</td>
<td>6.042</td>
<td>1.731 – 21.086</td>
</tr>
</tbody>
</table>

Table 3. Distribution of Risk Factors for the Incidence of Barotrauma Tympanic Membrane in Divers Group of Traditional Air Compressor

Bivariate analyzes intended to determine the value of the relationship and the prevalence ratio (RP) on the incidence of barotrauma tympanic membrane of the significance level of 95%. The full distribution of risk factors in a group of divers air compressor can be seen in table 3.

Multivariate analysis showed that of the eight variables candidates analyzed together (method enter) there are two related variables that proved statistically significant effect on the incidence of barotrauma tympanic membrane that speed down ≥ 18 meters minute and don’t use the tools of diving (mask, snorkel and fins). The analysis result can be seen in table 4.

Table 4. Logistic Regression Analysis Results Multiple Divers Hold Breath Traditional Scavengers Coins

<table>
<thead>
<tr>
<th>No</th>
<th>Variable</th>
<th>Value B</th>
<th>p</th>
<th>RP</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>95% CI Lower</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>95% CI Upper</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Speed down divers ≥18 meters per minute</td>
<td>2.888</td>
<td>0.020</td>
<td>17.963</td>
<td>1.562 – 206.504</td>
</tr>
<tr>
<td>2</td>
<td>Do not use the tools of diving (mask, snorkel, and fins)</td>
<td>2.262</td>
<td>0.018</td>
<td>9.600</td>
<td>1.471 – 62.652</td>
</tr>
<tr>
<td></td>
<td>Constanta</td>
<td>7.954</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Multivariate analysis showed that of the six candidate variables analyzed together (method, enter) are the variables
associated statistically proven effect on the incidence of barotrauma tympanic membrane that divers ages older adult ≥ 37 years. The analysis result can be seen in table 5.

Table 5. Logistic Regression Analysis Results on A Traditional Diver Air Compressor

<table>
<thead>
<tr>
<th>No</th>
<th>Variable</th>
<th>Value</th>
<th>p</th>
<th>RP</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Adult age old diver (≥37 years)</td>
<td>1.876</td>
<td>0.025</td>
<td>6.524</td>
<td>1.268 – 33.559</td>
</tr>
<tr>
<td></td>
<td>Constanta</td>
<td>3.99</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DISCUSSION**

Analysis multivariate results showed that the traditional group of divers hold breath scavengers coins at speed down ≥18 meters minute proved to be statistically influenced the incidence of barotrauma tympanic membrane, showed with p= 0.020. After calculation is based on the category of speed down ≥18 meters minute <18 meters minute have prevalence ratio 17.96 times compared to the speed drops < 18. Supported also by the observation and in-depth interview.

Observation: Divers coins mostly many divers jumping from the top of the boat dock when starting the dive. Divers catch coins many scrambling to dive to catch. The majority of young adults and many don’t use the tools of diving, catches while swimming a lot in store in the mouth, especially the children.

Indepth interview: I jump off the boat dock first and then swim while waiting for the passengers of the ship ferry/group of bus passengers throw coins into the sea, if one is tossing a coin I and friends rollicking scramble first diving catch coins already holding I hurried back to the surface. If a passenger ferry flipping a coin away from my stay I chased rollicking dive if not arrested me first and then I surfaced quickly diving back to catch the coins and then rise to the surface. These activities often I do to get a lot of money, not least me and friends at the time it hurt my ears diving forward to catch coins.

The results of this study in accordance with the legal theory that the speed drops Boyle affects the ear cavity, especially a depth of I OR (first 10 meters depth) depth and then subsequently decreased pressure in accordance with the law Boyle.\(^\text{(7,14)}\)

Multivariate analysis showed that traditional divers group of breath hold diving scavengers coins in not wearing immersion tools statistically proven risk factors that influence the occurrence of barotrauma tympanic membrane, showed with p=0.018. After calculation of the risk based on the categories of divers don’t use the tools and wearing scuba diving tools have a prevalence ratio of 9.6 times compared with the divers who used the tools of diving. Supported by observation and indepth interview.

Observation: “Surveys of the port of Ketapang Banyuwangi indicate that divers hold breath scavengers coin majority didn’t use the tools of diving. Divers wear diving consists of tools, masks and flippers condition isn’t good”

Indepth interview: I think diving equipment is expensive, and no diving equipment store in Banyuwangi in the city of Surabaya and Denpasar. I dive easier to dive without scuba tools, I have never had a friend it’s not comfortable to wear a diving tools

The problem started diving often jump off the pier by ferry while exciting attractions sympathy for the passengers to throw coins

The results of this study are consistent with research conducted by Ekowati,\(^\text{(3)}\) shows that the traditional fishermen divers who don’t use the tools of diving at risk was 0.82 times compared with traditional divers fishermen who use the tools of diving. Another study that same was done by Kartono.\(^\text{(15)}\) shows the
traditional diver fishermen who don’t use the tools of diving at risk by 1.5 times higher compared to the tympanic membrane barotrauma divers who don’t use the tools of diving.

Analysis multivariate results showed that the group of divers on a traditional air compressor with divers age category older adults \((\geq 37\) years) were shown to be statistically as a risk factor for barotrauma tympanic membrane, showed with \(p=0.025\). After calculation of the risk based on age category divers elderly adults and young adults have a prevalence ratio of 6.25 times compared with young adults aged divers.

The results of this study differ from research conducted Mao Cheng et al.,\(^{(16)}\) which indicates that the swimmers performed in children up to teenagers (young adults) occur ear barotrauma until the rupture of the tympanic membrane with \(p=0.05\). The results of this study are consistent with research Thritz and Kadir \(^{(17)}\) in research explaining divers ages mostly in the age group 26-30 years of 31.8%.

The risk factors of age in the health diver dives basically not strict age limit as long as it meets the requirements of health, where divers in an ideal age to dive between the ages of 16-35 years. Age is the individual characteristics that can influence the behavior of diving. Behavior that doesn’t match SOP divers dive safety have a direct impact on several organs, especially the ear cavity. Age also plays an important role in receiving information in making decisions for the safety and comfort of dives (safety dive)\(^{(4,18)}\).

**CONCLUSIONS**

Proved to be statistically the incidence of barotrauma tympanic membrane in the group of divers hold breath scavengers coins is the speed down \(\geq 18\) meters per minute supported by qualitative data (in-depth interview) that we start diving by jumping from the top of the boat dock with a height of 5 meters and scramble dive for coins thrown by the passenger ferry, if the coins have not been caught, we quickly dived back to catch the money is still hovering in the water while not use the tools of diving (mask, snorkel and fins) is supported by qualitative data (in-depth interview) that we were not able to buy diving equipment because it is expensive an slowed down in time to take the coins. The air compressor a group of divers with divers older adults age \(\geq 37\) years was supported by qualitative data (in-depth interview) that we’ve aged \(>37\) years.

Several risk factors that are not proven effect on traditional divers hold breath scavengers coin is an adult divers old age (\(\geq 17.5\) years), normal body mass index (\(<18.5 \text{ and } 22.9 \text{ kg/m}^2\)), length of work (\(\geq 5.5\) and 8 years old), low levels of education primary and junior diver, SOP knowledge level of safety dive diver poorly (score <66), the frequency of dives frequently (every working day), speed ride \(\geq 60\) feet, diving depths \(\geq 5\) meters and low-income divers 1.24000/month, whereas in traditional divers air compressor is not normal body mass index (\(<18.5 \text{ and } >22.9 \text{ kg/m}^2\)), length of work (\(\geq 5.5\) and 8 years old), low levels of education primary and junior diver, SOP knowledge level of safety dive diver poorly (score <66), the frequency of dives frequently (every working day), speed down \(\geq 60\) feet, speed ride \(\geq 20\) meters, and low-income divers Rp. 1,240,000.00/month.

Suggestions are expected to improve the health service extension program or socializing associated with the incidence of ear barotrauma on all traditional divers, improve early inspection program non-communicable disease (NCDs) related to ear diseases (ENT) on traditional divers. Coordinate with marine and fisheries agencies in the partnership program held training dives according to SOP safety dive. People expected all traditional divers
hold breath scavengers coins need to complete the storage pockets of coins and auxiliary equipment such as diving mask, snorkel and fins. Traditional divers air compressor with age-old adult divers ≥ 37 years switched professions to deliver domestic and foreign tourists to the Island Tabunan belongs to the Banyuwangi Regency began crowded with tourists at this time

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VOLUNTARY COUNSELLING AND TESTING PROCESS BASED ON CLIENT PERSPECTIVE IN SEMARANG CITY

Widia Shofa Ilmiah

Health Science of Hafshawaty Zainul Hasan Probolinggo District East Java Indonesia.
Email: widiailmiah@yahoo.com

ABSTRACT

The HIV case in Indonesia in 2013 cases of HIV is 29,037 case and AIDS is 6,266 case. The Data of Health Office Semarang City on January-August 2013 is 324 case and AIDS is 387 cases. According to the AIDS Prevention Commission in Semarang City, VCT clinics service that has a number of 13 places and giving active service a number of 12 VCT clinics.

The technique sampling is use purposive sampling. The number of primary informant on VCT Clinics in Semarang city are 8 counselor and triangulation of informant are 8 client. The results showed that the process of counselling VCT well done by majority of counsellor and the results of counselling VCT showed that of the 8 clients who follow the activities of the VCT, 1 client are not following to HIV testing because he is not ready. More factor that affect the success of counselling VCT, that are counsellor factors (knowledge of counseling VCT, attitude, motivation, experience to be counsellor dan quality of counsellor, ability of counsellor to solving the barriers); Client factors (educational level, knowledge of VCT, attitudes, motivation, experience and social culturals); and available of facilities and infrastructure of VCT, and easy to implementation, as well as the existence of the policy on the VCT and supervision on the VCT.

The successfully of VCT counselling is showed of the same number of clients that follow pre test counselling, follow tes of HIV, and post test counselling. However, it still needs to be improved in several aspects, among other aspect of knowledge in says time retrictions of counselling and says conclutions in the end of counselling and improve of counsellor motivation in implemenatating of VCT counselling and facilities and infrastructures, supervision on the VCT, that support the VCT.

Keywords: Voluntary Counselling and Testing, HIV

INTRODUCTION

Vision of Indonesia in health development as an integral part of national development which itself is organizing efforts to achieve health ability of healthy life for all inhabitants in order to realize the degree of optimal health, a great means for the development and construction of human resources. According to the Regulation of president Number 75 in 2006, that the need for increased efforts to combat HIV and AIDS throughout Indonesia(2).

The epidemic of HIV (Human Immunodeficiency Virus) is the global crisis and the severe challenges to development and social progress. The situation of HIV/AIDS in Indonesia since 2000, generally are at the stage of the epidemic is concentrated. However, in some Provinces, such as the Provinces of Papua and West Papua Province, the spread of HIV infection is already at the
stage extends through risk intercourse on the general public\(^{(2)}\).

According to Census in 2007, that the Government of Indonesia will launch a comprehensive service to fight the spread of HIV/AIDS throughout the district/city through access for all (Universal Access). This comprehensive services includes counseling, prevention, care, support and treatment the rules and the law\(^{(3)}\). The comprehensive services, one of them VCT services.

Incident of HIV in Indonesia in 2011 a number of 21.031 person and AIDS a number of 7.004, in 2012 incident of HIV a number of 21.511 person and AIDS a number of 5.868 person, while in 2013 incident of HIV a number of 29.037 person and AIDS a number of 6.266 person\(^{(6)}\).

According to AIDS prevention commission distric in Central Java Province, epidemic of HIV in Central Java Province till Juny, 2012 that is 2.922 person and AIDS is 2.379 person, and 642 person is death. HIV epidemic in Central Java Province, till June, 2013 is 3.608 person and AIDS is 3.141 person, and 782 person is death\(^{(7)}\). But in Semarang City, according to health departement in Semarang City, Data incident of HIV cumulative in 2012 a number of 520 person and AIDS a number of 339 person. Data incident of HIV cumulative in January until August, 2013 are 324 person and AIDS are 387 person\(^{(8)}\).

Based on AIDS prevention commission Semarang City that is still a new person that involve in Care, Support and Treatment (CST), that are 374 person (2011), 435 person (2012) and 148 person (2013)\(^{(9)}\). According to Central Health Departement (2007), Indonesia have targeted 20.000 Person Live with HIV/AIDS get an Anti Retrovirral Theraphy (ART). In Indonesia, new access of ART is about 50% (10.622 from 20.000 AIDS incident that targeted till 2007), this access more lower than global ART access\(^{(3)}\). Cumulative of PLHA that give ARV in 2012 that is 1650 person and 2013 January to August is 1800 person\(^{(9)}\).

Data of achievement on VCT services in Semarang City according to AIDS prevention commission Semarang, in 2012 the client visit is about 4.293 person and who are follow pretesting HIV is 4.194 person, and follow to testing HIV is 4.122 person and follow post testing HIV is 4.113 person. On January until August, 2013 the number of client visit is 3.131 person, follow pretesting HIV is 3.126 person and follow to testing HIV is 3.211 person and follow to post testing HIV is 3.205\(^{(9)}\).

Based on the preliminary study conducted by researchers at 18-28 February 2014 around the VCT Clinic in Semarang city a number of 13 VCT clinics, by doing interviews to VCT counselors and medical recorder as well as through secondary data collection, it is known that there are 4 VCT clinics that can be researched and eximened.

Based on the above data, shows there is still failure counselors who conduct counseling on HIV berresiko patients to take a test for HIV. Over 70% of the demands of the patient dissatisfaction due to no communication between interwoven with both parties\(^{(4)}\). In addition, this is confirmed by the results of the research from Rimawati (2011), who stated that most of the subjects of the research argue that eye contact is done when the counsellor causing any discomfort (active listening skills). After counselling is done, most of the subjects of the research argue that the counselor does not convey the conclusions of the counselling activity that has been done to the patient (the skill of paraphrasing) so that the subject of the research do not know the benefits of counseling done by that time\(^{(11)}\).

Based on the backgroun, if the issue of counselling between counselor and the client does not immediately corrected, this will make the client feel ignored by the counselor and the lack of
information obtained from the client. Inaccurate information will provide less impact precisely the intervention granted to the client, so the client's perceived problem is not resolved properly. The objective of this study was to know about voluntary counseling and testing process based on client perspective in Semarang City.

MATERIAL & METHOD

Study Design
This research uses qualitative design with case study research. The objective of qualitative design in this study to develop of concepts that helping to get deep understanding or social phenomenon and natural behavior setting. In this study, we use static voluntary counseling and testing (VCT) and not partial VCT. And other that the VCT clinics are active to give health care and have more client visit.

Study Population and Informant
Population of this study are all counselor VCT in Semarang city a number of 32 person as primary informant and client as secondary informant. Inclusion criteria of this study that is counselor in VCT clinics, informant that give counseling in VCT clinics static and active giving services, VCT clinics have more clients and client that visit in VCT clinics. Counselor and client were excluded from the present analysis if they denial to be participant. After exclusions, the final sample size was 8 counselors and 8 clients. There are 8 counselors which distributed into 3 person each in Lung Health Clinic and in General Hospital of Semarang City, the rest (1 person each) in Poncol Primary Health Care and Halmahera Primary Health Care.

Data Collection, Instrument and Procedures
The instrument of this study was used researcher as primary instrument and free list interview, indepth interview, check list and recorder. The data collection conducted with interview and observation. A structured data collection was determined social situation, choice subject study, explain about study procedure, giving informed consent. Researcher continue with a short interview to primary informant to collect demographic data and do the nonparticipative observation on counselling process to primary informant and then deep interview after the counselor finishing counseling process. Researcher also record counseling process based on informed consent to counselor and client.

Data Management and Statistical Analysis
Data management conducted with content analysis procedure that is transcript, meaning, summarize and organize data, data abstraction, variable identify and correlation between variables use qualitative.

Validity and Reliability Study
Testing of validity in this study was used qualitative methods includes credibility with triangulation of source, trasferability, dependability, confirmability conducted examine result of this study crosscheck with process of this study.

RESULT
Geographically the town is located between Semarang lines 6° 50'-7° 10' South latitude and 109° 35'-110° 50' East longitude. The West in the limit by Kendal Regency, the East by Demak Regency, South of Semarang Regency and North is bounded by Java Sea with a long coastline encompasses 13.6 km. Altitude Semarang is located between 0.75 up to 348.00 above the coastline. An area of Semarang City amounted to 373. 67 km2, and is 1.15% of the total land area of Central
Java province. The study was conducted in four selected health facilities that is Lung Health Clinic, General Hospital of Semarang City, Poncol Primary Health Care, Halmahera Primary Health Care.

Lung Health Clinics provide the service of VCT since 2004 with the model of internal and external socialization. In 2005 the Ministry of VCT model is done with the counselor. Officially, for the service of the clinic has been opened VCT since 2006 at the Lung Health Clinics Semarang. Mobile VCT in BKPM started vacuum since 2010 until the end of 2012 and since 2013 become active until present. Clinic service to VCT in the General Hospital of Semarang City, has been open since 2006 and VCT model use static VCT.

Table 1. Health Facilities and Infrastructure in Semarang City

<table>
<thead>
<tr>
<th>Health Care Facility</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Hospital</td>
<td>10</td>
</tr>
<tr>
<td>Regional General Hospital</td>
<td>2</td>
</tr>
<tr>
<td>Central General Hospital</td>
<td>1</td>
</tr>
<tr>
<td>The Indonesian Armed Forces and Police Hospital</td>
<td>3</td>
</tr>
<tr>
<td>Mental Hospital</td>
<td>1</td>
</tr>
<tr>
<td>Plastic Surgery Hospital</td>
<td>1</td>
</tr>
<tr>
<td>Mothers and Children Hospital</td>
<td>3</td>
</tr>
<tr>
<td>Maternity Hospital</td>
<td>2</td>
</tr>
<tr>
<td>Maternity Clinic</td>
<td>6</td>
</tr>
<tr>
<td>Treatment Primary Health Care</td>
<td>12</td>
</tr>
<tr>
<td>Non-Treatment Primary Health Care</td>
<td>25</td>
</tr>
<tr>
<td>Helpers Primary Health Care</td>
<td>35</td>
</tr>
<tr>
<td>Mobile Primary Health Care</td>
<td>37</td>
</tr>
<tr>
<td>Voluntary Counseling and Testing Clinic</td>
<td>13</td>
</tr>
</tbody>
</table>

Source: Semarang Health Department, 2013

Administering VCT Clinics in Halmahera, initially at the start with its opening in the counseling clinic in 2008. Next switch into service by providing VCT clinics that are more comprehensive, not just HIV AIDS counselling course and has done since the year 2013 by the method of Static and mobile VCT. Halmahera Primary Health Care in their program of clinics is working with Griya ASA PKBI NGO and SGC (Semarang Gay Centre), PERWARIS (Community of transsexual) and OPSI in doing mobile VCT, VCT or Static with references from NGOs. Services of VCT clinics in Poncol Primary Health Care since 2006. The service model is done with Static VCT. Outreach client obtained by NGOs Griya ASA and Correctional Facility in Semarang City.

VCT Process Analysis
Pretesting HIV counselling
Based on the results of this study through nonparticipatory observation of the process of counseling pra HIV testing to the 8 primary informant, known to the 6 primary informant has implemented the micro counselling skills with the client-friendly and professional welcome, introduce the name, job and role as a counselor in an effort to instill a sense of trust to the client, but the 2 primary informants has not been introduced.

The primary informant who has not and has introduced the name and his work, in total 8 informants has been trying to dig up the client data and fostering a relaxed, comfortable atmosphere with the client at the time of counseling pra tests are conducted through two-way communication. However, 6 informants has introduced himself, 2 of which have yet to explain counselling sessions, while the other informant have explained the counseling session that consists of pra HIV testing counseling, HIV testing and counselling post HIV testing.

Based on the results of observational studies, that the length of time the Counselor of pretesting HIV performs the test takes approximately 10 to 30 minutes. However, from 8 primary informants, entirely has explained the procedure of tests and confidentiality, stressing the limits of client confidentiality, so that clients feel comfortable and more trust to counsellors and believe that all the things conveyed to Counsellor will be kept confidential from the various parties are not interested parties, but from two informants who have not yet introduced
the name and explain the time pretests, 1 of whom has not yet to convey that information and data the client will be in the record while other informants have clarified the matter.

In addition, 8 primary informants has also been asking the reason or the background client follow counseling pre testing HIV to examine the behavior of high risk clients, such as sexual intercourse multi partner without and or using condoms, injection drug use, as well as a history of blood transfusions, conducting discussions about HIV/AIDS Foundation for reviewing the client’s understanding of HIV/AIDS basics and how transmission is known by the client for this and provide information to clients about HIV testing, and a possible forecast of positive and negative test results, and discuss about the advantages and disadvantages if doing HIV testing, so that more clients are ready to take HIV testing after obtaining information reasonably sufficient.

Based on the results of this study with in-depth interviews on 8 primary informants, there are still barriers in counseling pretesting HIV, among others, the difficulty of providing adequate time to do counseling pretesting HIV because of the VCT is additional duties provided the leadership to the counsellors and counsellors have a major task at other clinics. Efforts are being made, namely by offering to clients like to be called as what. For the next meeting of the counselors are able to adapt. The other informant delivered the resistance is when digging a risk factor, especially at public client and client identity especially men sex men.

Testing HIV counselling

Of the total number of 8 primary informants, aware that the whole 8 informant has provided quote for HIV testing to the client after doing counseling pre testing HIV, motivating clients to take a test for HIV, then ask for informed consent by handing sheet of informed consent to the client as a statement of approval to conduct HIV testing and are given individually to each client, prepare of reference paper to a laboratory for examination of HIV by using a code that consists of four digit of the name of the client and the two digits of the year, months and date of birth and have confirmed to the client to take the test results.

In addition to the data that mention above, observations on the implementation of HIV testing, that the implementation of HIV testing is performed within one day (oneday service), unless a patient who came in the evening, his test result can be know the next day because the laboratory officer does not work 24 hours. Long waiting time for HIV testing among the 30 minutes up to 1 hour after taking the blood. The process of the taking of the blood was done in the laboratory by laboratory attendant if the service by VCT was done in the morning and the taking of the blood was done at night and the blood that has been taken by the Counsellor at store in refrigerator.

In-depth interview results to 8 primary informants about the barriers in the implementation of HIV testing, it is known that 8 informants said its barriers that is not all clients willing to follow HIV testing though has done counseling pretests and have been getting enough information about HIV/AIDS basic information, HIV testing, advantages and disadvantages of not following HIV testing at the time of pretest counseling.

Post testing HIV counselling

Result of this study with observations to 8 primary informants, known that for the follow-up test results are positive, the Counselor explains the meaning of the positive HIV test result, similarly to HIV testing that the results were negative. Counseling provided to clients with HIV-positive results that
ensure whether the client has enough emotional support from his closest people, discussing about behavior risk change with safety sex using a condom when sex with their partner and provide support for the following therapies ART (Anti-Retroviral Therapy).

All informants (8) had been discussed the plan reduced risk of clients and has delivered information about the support that can be accessed by clients, such as Peer support group, Case Managers service and Care, support and treatment (CST) and or if Counselors can't afford to help solve client problems and the resources available.

DISCUSSION

Pretesting HIV counselling

Based on the results of this study through observation of counselling pretesting HIV to 8 primary informants knowing that the counseling process conducted well by counselor who comes lung health clinic, then follow by counselor comes from Halmahera primary health care, General Hospital of Semarang City and Poncol Primary Health Care.

The results on 8 primary informants known that before doing the counseling, pretesting HIV, 6 primary informants have implemented the micro counselling skills with the client-friendly and professional welcome, introduce the name, job and role as a counselor in an effort to instill a sense of trust to the client, but 2 primary s has not been introduced.

Micro skills counselling is an important component of effective communication in order to develop relations of mutual support between the client-counselor. Each of the counselors need to have and develop micro skills counseling. Microskills counseling consists of active hearing skills, ask questions, create an atmosphere of quiet and comfortable, non verbal behavior that includes body language, namely facial expressions friendly or not, be professional and paralinguistik such as smiling are forced to.

According to Head of health care stated that the success of the post testing HIV counselling is built upon counseling pretesting HIV. In addition, In pretesting HIV convey about confidentiality, timing of counseling be important in counseling success. The informant also need to say that data of client will be written to them self.

In pretesting HIV counseling, the primary informant had delivered system support. Head of health care stated that important information that convey in pretesting HIV counseling includes ART, support by case manager services, peer group, confidentiality, rights to deny to HIV testing and assessment other support system.

Testing HIV counseling

The results of the research implement-tation of HIV testing procedure has been done by all the primary informant (8) by providing a quote to a client for HIV testing, giving informed consent as a form of client agreement to do actions, and have confirmed to the client to take the HIV test results for clients who take a test for HIV.

The observation to the primary informant, noted that the 8 primary informants have provided a quote for the HIV test to the client after doing counseling pretesting HIV, motivating clients to take a test for HIV, then ask for informed consent by handing sheet of informed consent to the client as a statement of approval to conduct HIV testing and are given individually to each client. In addition, the primary informant (counselor) prepare reference sheet to the laboratory for examination of HIV by using a code that consists of four letters of the name of the client and the two numbers of the year in the date of birth. The primary informant (counselor) also
have confirmed to the client to take the test results.

The grant offer HIV testing to clients is part of the management of the VCT. According to Director General of Medicine Services, management of the VCT that is informed consent and HIV testing. Factors that influence a person to be positive according to Willis is a personality (attitudes, emotional, intellectual, motivation), the client's expectations, experience and education\(^{(21)}\).

Based on the results of the research to the informant cross check about the motivation of the client follow VCT, it is known that 7 clients have good motivation in following VCT. Clients are motivated to come to the VCT clinic to access information from a friend.

**Post testing HIV counseling**

The results of the observation post testing HIV counselling study to 8 primary informants, aware that the whole (8) primary informants before convey the test results to clients, informants do reviews and vent a few moments the client and ensure that clients are ready to know HIV test results. Submission of the results of tests carried out by the same Counsellor with a short and clear. In addition, the entire (8) primary informant has provided a fairly quiet time to deposit the meaning of test results and check test results about client's understanding and addressing the emotional response to the client. For the client who crying, counsellors give time to the client to express his sadness and gave the handkerchief to wipe tears of the client. As for clients who deny the test results, the counselor gives the opportunity to the client to express his denial and provide information to clients can retest to make sure the results are valid.

A major key in delivering test results is re-examining the client test results and do before meeting the client to ensure that the test results are the property of the client, test results submitted directly to clients with face-to-face, reasonable and professional when calling the client back to the waiting room, the test results should be kept from various interests, when the client will notify the results of tests on the couple, should be made in the meeting (counseling couples).

The results with observations to the primary informant 8, known that for the follow-up test results are positive, the Counselor explains the meaning of the positive HIV test result, similarly to HIV testing that the results were negative. Counseling provided to clients with HIV-positive results i.e., ascertain whether the client has enough emotional support from his closest people, discussing about risk behavior change with sex that is as safe as using a condom when sex with her partner and provide support for the following therapies ART (Anti-Retroviral Therapy). From 8 informants, 6 primary informants had discussed tell HIV status to another party such as a nearby person, couple or family and or parents while 2 informants have yet to discuss it.

The results of this study in accordance with informants cross check, 6 clients convey that counselors have provided information about the alternative plan required of the client, i.e. the use of condoms and all clients that the Counselor had asked about support soon owned clients such as the closest family, spouse and let you know if there is other support agencies such as peer support groups and more.

Submission of the results of HIV testing and HIV reactive Non-reactive is part of counselling post HIV testing should be done by a counsellor. Submission of the results of HIV testing aims to provide an understanding to the client about the status of his health and follow-up can be done by the client. In addition, discussions on the possibility to tell HIV status to others and risk plans are part of the counselling stages posttests that should be done by counsellors VCT.
He submission of non-reactive HIV test results among others, inform about the window, information about contagion and risk loss plan, summarizes and explores further the various obstacles to safe sex and the use of behaving syringes safely, and observe the client's reactions again. Whereas the delivery of HIV reactive test results ensure the client is ready to accept the results and be done clearly and directly, providing a reasonably quiet time to absorb information about test results, check the client's knowledge and understanding about the meaning of the test results and test results, dig and do clients express ventilation client emotion, dig real rncana would do the clients, giving the opportunity to the client to ask questions as well as planning follow-up lajut or reference if needed.

Support soon owned clients, follow-up support, care and treatment is also important to do in a post HIV testing counselling. Based on the results of the research, 6 informants have been discussing the possibility of informing the HIV status of clients, 4 of them have not yet delivered the conclusions from the results of counselling that has been done, 2 others have conveyed the conclusions end of counselling, while 2 primary informants who has not discussed the possibility of notifying the client's HIV status, 1 of them has been give conclusion at the end of counselling and the other one has not discussed the conclusions at the end of counselling.

The clients (4 person) seem do not understand some things to do (short term follow-up) and long-term follow-up and do not understand very well the benefits of counseling VCT. This is consistent with cross-examination results indicating that 4 clients convey if the counseling process has not ended now, conveying the conclusions of the whole process that has been done and most counselors have given conclusions about the counseling process.

CONCLUSION

The counselling process had been conducted by 5-6 counsellor in accordance with guidelines voluntary counseling and testing. Knowing that is still failure counselors to conducted VCT counselling. Of 8 clients who visit to the VCT clinic, only 1 client that has not yet been willing to join the HIV testing and treatment for HIV for reasons not yet ready. The success of counseling known of as great number of clients who counseling pretesting HIV, HIV testing and counselling post testing HIV.

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SOCIAL INTERACTION ABILITY AND THE BULLYING BEHAVIOR AMONG ADOLESCENTS: A CORRELATIONAL STUDY

Muliani Septia Rini, Yoyok Bakti Prasetyo, NurLailatul Masruroh

Fakultas Ilmu Kesehatan Universitas Muhammadiyah Malang
Email: yoyok@umm.ac.id

ABSTRACT

Bullying is an aggressive behavior that deliberately and happened repeatedly attack the weak victim, influenced by factors of ability in social interaction. Low ability in the social interaction will make adolescents turn into an aggressive action for addressing their social problems. The impacts of bullying behaviors are as follows: rejection of peers, deviant behavior, delinquency, crime action, psychological disorders, and depression.

The study design used in this study is observational with cross-sectional approach. This study was conducted on 50 respondents in SMK X Malang. Data analysis was performed with the Spearman rank test.

Adolescents whose low ability of social interaction were found higher compared to those whose high and moderate ability. There is a relationship between the ability of social interaction and bullying behavior among adolescent. The ability of adolescent in the social interaction becomes an important factor that suppress the bullying behavior among adolescents.

Keywords: Bullying, Social Interaction Ability, Adolescent

INTRODUCTION

Ability in the social interaction could help teenagers to conform to the standards of community expectations norms prevailing around him (Matson, & Ollendick, 2011) because when teenagers can not conform to the norms surrounding, they will turn into somethings’ bad and tend to have behavioral disorders and consequently they will also do somethings that can harm themself or others (Lohey, 2007). Furthermore, adolescents who are have low ability in the social interaction tend to show prejudice hostility, when they faced social ambiguous stimulus and they often interpret it as a sign of hostility to deal with aggressive action (Crick & Dodge, 2001). The aggressive action that now becomes as a problem in adolescents that occur in school’s environment is called as bullying. As its impact, they are often rejected by their parents, peers and environment around (Patterson, 2005).

Moreover, bullying is also defined as an aggressive behavior that is intentional happened repeatedly to attack a target or victims who are weak, insulted easily and could not defend themselves (Sejiwa, 2008). Factors of bullying according to the National Association of School Psychologists (2012) are consist of family, neighborhood, school and individual (groups, social interaction skills, popularity, attitude, gender, age, intellectual, depression).

Koebler (2011) stated that high school students had bullying intimidation, and the detail of the data are as follows: 7.4% of students were bullied online, 5% of high school students reported have been threatened, and 6.6% have been physically intimidated. Sejiwa (2008) said that the rate of violence was 67.9% in Senior High...
School, and 66.1% in Junior High School. It is important to note, the Violence which have been done among students stood at 41.2% for Junior High Schools and 43.7% for the Senior High School. It has been knew that the highest category of psychological violence was excommunication, and the second rank is occupied verbal violence (mock) and physical violence (hitting).

The impact of bullying especially for the victim according to a study that conducted by the National Youth Violence Prevention Resource Center Sanders (Sanders, 2005) showed that bullying can make teens will feel anxious and frightened, it also affecting concentration in learning and lead them to avoid school. Accordingly, If it continues in the long time, it will influence the self-esteem of students, increasing social isolation, raises withdraws behavior and also makes teenagers are vulnerable to stress and depression, and insecurity feelings. Meanwhile, the bullying performer tends to show an over sense of confidence and high self-esteem as well, they tend to be aggressive and show the behavior that provocation. They are the typically rampart, irritable, impulsive and low tolerance of others. The bullying performers tend to have a strong need to dominate others and less empathy to the victims.

In regards to the importance of the ability in the social interaction on bullying behavior in students, especially in adolescents in order to reduce the incidence of bullying behavior, it is necessary to invent studies on the association's ability in the social interaction with the bullying behavior on adolescent. The purpose of this study was to determine the relationship between the ability in the social interaction factor and bullying.

### MATERIAL & METHOD

This study used cross sectional design. The population were the students of SMK X Malang, while the samples were 50 adolescents. The independent variable was the ability in the social interaction which consists of 6 domain of social, it measured with SSI (social skills inventory) suggested by Riggio (2003), the 6 social domain are Emotional Expressivity, Emotional sensitivity, Emotional Control, Social Expressivity, Social Sensitivity and Social Control. SSI is a Likert scale questionnaire consists of 30 items of statements. Next, the dependent variable was bullying which means the Aggressive Behavior such as physical violence, verbal and non-verbal violence that a person/group of people to another individual who is weak. The questioner covered 11 items of statement.

### RESULT

The research findings showed that the low ability of students in social interaction reached 29 (58%), while the moderate ability was 15 (30%) and the high ability in social interaction was 6 (12%). The low ability in social interaction was concluded if the score <75, and it is moderate if the score of 75-105, and the high ability for the score >105.

Table 1. The Social Interaction Ability of Students in SMK X, November 2014

<table>
<thead>
<tr>
<th>Domain</th>
<th>The Social Interaction Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low 0%</td>
</tr>
<tr>
<td>Emotional Sensitivity</td>
<td>19/38%</td>
</tr>
<tr>
<td>Emotional Expressivity</td>
<td>23/46%</td>
</tr>
<tr>
<td>Emotional Control</td>
<td>16/32%</td>
</tr>
<tr>
<td>Social Expressivity</td>
<td>15/30%</td>
</tr>
<tr>
<td>Social Sensitivity</td>
<td>34/68%</td>
</tr>
<tr>
<td>Social Control</td>
<td>28/56%</td>
</tr>
</tbody>
</table>

Based on table 1 it can be seen that both of emotional expressivity and social control gained the highest percentages.
with 56%, and both of these had the low ability of social interaction.

Table 2. Bullying Behaviors among Students in SMK X Malang, November 2014

<table>
<thead>
<tr>
<th>No</th>
<th>The Score of Bullying Behavior</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low</td>
<td>9</td>
<td>18%</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>38</td>
<td>76%</td>
</tr>
<tr>
<td>3</td>
<td>High</td>
<td>3</td>
<td>6%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>50</td>
<td>100%</td>
</tr>
</tbody>
</table>

Based on the Table 2, it shows that the highest number of respondents who have bullying behavior was 38 (76%). The types of bullying that more dominant among adolescents in SMK X Malang is a bullying direct physical contact.

Table 3. The Relationship between the Ability of Social Interaction and Bullying Behavior among Adolescents in SMK X Malang

<table>
<thead>
<tr>
<th>Variable</th>
<th>$R_{cont}$</th>
<th>$p$</th>
<th>$r_{table}$</th>
<th>$a$</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>The factor of ability in the social interaction with bullying behavior</td>
<td>0.566</td>
<td>0.001</td>
<td>0.279</td>
<td>0.05</td>
<td>$H_1$ accepted</td>
</tr>
</tbody>
</table>

Based on the analysis in Table 3 above, it can be explained that the probability value (Sig.) < A. Where it can be concluded that $H_1$ is accepted, it means that there is a relationship between Ability of Social Interaction and the Bullying Behavior. The amount of 0.566 correlation shows that the level of relationship between the two variables is moderate.

**DISCUSSION**

Basically there is no theory that explains precisely that men are more likely have lower ability in the social interaction than women. Based on the characteristics of social life between men and women, Rahayu (2008) said that women are more socially sensitive, however, men are more selfish (selfish), so that all their activities and life are always linked to their wide-range of projects and materials from his work.

Emotional expressivity is generally refers to sending nonverbal communication skills, it reflects the individual's ability to express emotions spontaneously and accurately, feeling emotional states and the ability to express attitude and nonverbal cues of interpersonal orientation (Friedman & Riggio, 2005). Whereas Social Control refers to skills in self-presentation on an environmental social. Individuals with high social control will act skillfully capable of playing a variety of social roles and can easily socialize in the discussion. Individuals who have a high social control are smarter and wiser. Therefore, they can adjust personal behavior to conform to certain social situations (Loton, 2007).

The important of having ability in the social interaction for adolescents according to Johnson (2004): 1) Development of Personality and Identity; 2) Develop the Job Skills, Productivity and Career Success. 3) Improving the quality of life is another positive result of the ability in the social interaction because each individual requires a good relationship, close and intimate with another individual, 4) Improve Physical Health. Good relationships and mutual support will affect the physical health. Research shows that high-quality relationships associated with long life and can be recovered quickly from illness, 5) Improve Psychological Health. A research shows that a strong healthy psychology is influenced by positive relationships and the support from others.

Ability in the social interaction should be mastered by adolescents as a part of the development tasks so they are adaptable with the norms of surroundings.
(Mu'tadin, 2006), because when teens have the ability in the social interaction inept teenagers will have behavioral disorders that can harm themselves and others (Lohey 2007) than it makes teenagers less able to establish effective interaction with the environment and choosing aggressive actions as a coping strategy.

The Discription of bullying behavior among adolescents in SMK X Malang

Rigby (2007) identify the characteristics of the physical and mental characteristics of bullies or bully. Bullies is the aggressor, provocateurs and initiator of bullying situations. In general, Perpetrators are students who are physically large and strong, but not infrequently also he is small or medium but has a strong psychological dominance among his friends due to factors social status or position, while the characteristics of the victims of bullying based on Colorosa (2006) are: The new comer in the neighborhood, the youngest or smallest children in schools, and those who have traumatic experiences are often avoiding something that scarred them, children who are look obedient sometimes to covering their anxiety, lack of confidence, or children who does something because of afraid to be hated or want to please others, children whose behavior is considered disturbing others, those who do not want to fight or tend to show caving, children who are shy and hiding his feelings, and children who are reticent or unwilling to attract people's attention.

Bullying among adolescents and in the school environment had to get his attention because of the impact of bullying on victims and perpetrators. The impact of bullying to the victims according to a study conducted by the National Youth Violence Prevention resource Center (Sanders, 2005) shows that bullying can make teens feel anxious and frightened, affecting concentration in school and lead them to avoid school. If the bullying continues in the long term, can affect self-esteem of students, increasing social isolation, raises withdraws behaviors, make adolescents vulnerable to stress and depression, and also insecurity feelings. In more extreme cases, bullying can lead teens to do reckless, even kill, or commit suicide (commited suicide). The impact to the perpetrator is they will assume that they have a power of the situation around. If it continues without any interventions, next bullying can lead to the formation of other behaviors such as violence against children and other criminal behavior.

The relationship between the Social Interacting Factor Ability and Bullying Behavior in Adolescents

According to Hurlock (2001), most of adolescents are unstable over time as a consequence of the effort of adjustment on new patterns of behavior and new social expectations, teens are required to conform to the norms and expectations that exist in the community, and have a good ability of social interaction. When the ability of social interaction is low, it will lead to the less of capability to establish effective interaction with the environment and it will turn into choosing an aggressive actions as a coping strategy. One aggressive action of adolescents in schools is bullying. An overview of the bullying behavior from this study in SMK X Malang shows in a moderate level with 38 (76.00%), so that it is expected that students in SMK X can improve their ability in the social interaction to be better so the bullying or aggressive actions in schools will not occur.

CONCLUSION

The conclusion of this study were:
1) The description of adolescents’ ability of social interaction in SMK X Malang shows that the number of students who have low ability of social interaction is
higher than those with the moderate and the high; 2) The students of SMK X Malang have the low of Emotional Expresivity and Social Control; 3) The description of bullying behavior among adolescents in SMK X Malang is in the moderate category; and 4) There is a correlation between the ability of social interaction with bullying behavior among adolescents in SMK X Malang.

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IMPLEMENTATION OF CONTROL POLICY OF TOBACCO PRODUCTS FOR HEALTH IN DISTRICT OF JEMBER

Abu Khoiri, Christyana Sandra

Public Health Faculty, University of Jember, Jl. Kalimantan 37 Jember, 68121, Indonesia
Corresponding Author:
Mobile Phone: +62 8123065411; Email: abukhoiri@unej.ac.id

ABSTRACT

The formulation of the Government Regulation Number 109 of 2012 which sets about controlling materials containing addictive substances of tobacco products experienced many challenges. The affirmative groups consider an attempt to increase the degree of public health from the effects of carcinogens and addictive substances caused by smoking. Meanwhile, the opposition groups focus more on tobacco farmers which are economically affected. Therefore, the objectives of this study were to describe the implementation of such policies in District of Jember as one of the centers of traditional tobacco and cigarettes production in East Java.

This was a descriptive qualitative study with observational approach. The focus of this study was on triangular analysis of the policy (actor, context, and content) on the implementation of the policy of restrictions on addictive substances of tobacco products in District of Jember which was done in 2013. The study informants consisted of the main informants (tobacco farmers and cigarette manufacturers), key informants (District Health Office of Jember and Department of Industry and Trade), and additional informants (Jember’s District Legislative Board).

The implementation of control policy of materials containing addictive substances of tobacco products has not yet running effectively. The policy context is still restricted on tobacco production effort, not controlling of the effects of tobacco smoking. The content of the policies is not yet well understood by traditional cigarette manufacturers in Jember. Various obstacles faced at the central level made this policy run slowly. By the mandated of decentralization, District of Jember actually allowed to produce a local level policy regarding tobacco control to overcome the obstacles.

Keywords: Policy Analysis, Addictive Substance, Tobacco

INTRODUCTION

The implementation of Article 116 of Law Number 39 of 2009 on health is the issuance of Government Regulation (PP) of the Republic of Indonesia Number 109 of 2012 on controlling materials containing addictive substances in the form of tobacco products for health. This government regulation is a response to agreement of the member countries of World Health Organization (WHO) in the 56th World Health Assembly in Geneva in May 2003, which unanimously agreed on the text of Framework Convention on Tobacco Control (FCTC). Indonesia’s response to ratifying the FCTC is considered slow due to the specified time limit, Indonesia had not signed the agreement as an endorsement. Tobacco products and other processed products which contain economic interests are the separated pressure for the Government of Indonesia not to immediately sign the
FCTC. On the other hand, there was the insistence of the parties concerned with the health to immediately ratify the FCTC agreement.

Indonesia is a developing country, whose 98% of its tobacco products are utilized for cigarettes. The cigarette industry in Indonesia has a freedom that is almost not owned by any countries throughout the world (TCSC-IAKMI, 2010). Based on the composition of production, the provinces producing tobacco leaves in Indonesia have not changed. Tobacco production is concentrated in five provinces, namely East Java, NTB (West Nusa Tenggara), Central Java, West Java and North Sumatra, of which East Java province contributes nearly 40% of the national tobacco leaf production (TCSC-IAKMI, 2012). The province with the biggest excise tax contribution in Indonesia is East Java province, amounting to IDR 135.8 Billion while Central Java receives IDR 52.1 Billion, West Java receives IDR 1.4 Billion and Yogyakarta receives IDR 1 Billion (Sujatmiko, 2008).

According to Jawa Pos (in Hana, 2010), tobacco has a large share in contribution to regional income and export value of non-oil and gas commodities of District of Jember, East Java Province. The volume and value of tobacco exports is greater than the other seven export commodities. Compare to the export value of the other seven commodities such as edamame, coffee, mukimame, cocoa, okra, flat stone, and vanilie, the export value of Jember tobacco supplies is much higher, about 25 percent of the national tobacco exports.

In addition to producing tobacco with high-export value, District of Jember also has tobacco industry spread over in the various regions. There are 29 tobacco industries that produce processed cigarettes. The processed tobacco products include cigars, cigarettes without filters, cigarette with filters and klembek cigarettes. The tobacco manufacturers distribute the processed products not only in Jember region but also out of Jember area (Department of Industry and Trade, 2013).

The expectation and reality in Jember to run the government regulations are challenges that must be answered by the Local Government of Jember and their staffs. Therefore, it is necessary to study the implementation of the regulations on restriction of addictive substances in the form of tobacco products for health as a description of solution model to the dualism of interests concerning the livelihood of widespread community.

**MATERIAL & METHOD**

This study used observational study design with qualitative approach. The focus of this study was the triangular analysis of policy (context, content, and actors) on the policy implementation of the limitation of addictive substances such as tobacco products for health in District of Jember. This study is prospective (analysis for policy) considering that this policy has just been passed and implemented. The study informants consisted of major informants (tobacco farmers and cigarette manufacturers), key informants (District of Jember Department of Health and Department of Industry and Trade), and additional informants (District Legislative Board of Jember). Data analysis was carried out by content analysis.

**RESULTS & DISCUSSION**

The FCTC has contributed a lot to changing public perceptions of tobacco and the need of having strong laws and regulations to control the use of tobacco (Saly, 2011). Indonesian Government, through Government Regulation (PP) No. 109 of 2012, has set out a regulation which governs the management of
controlling the materials containing addictive substances such as tobacco products for health. For some people and communities, this policy is a non-technical issue considered threatening the needs of tobacco production by farmers. The tobacco industry develops along with an increase in the number of smokers.

District of Jember is an area that has potentials in tobacco plantation and is one of the tobacco centers in East Java province. The potential resources owned District of Jember in the form of climate, land; water and human resources are very supportive to the development of tobacco plants. Moreover, the potential and tobacco crop of Jember with export quality have been legendary, not only locally but also even abroad. Besides its popularity as a national barn, Jember is also known as the city of tobacco because it belongs to one of the world’s tobacco-producing areas. There is a type of tobacco which is only produced in District of Jember, namely Na-Oogst tobacco. This type of tobacco is the leading commodity of Jember and also Indonesia, so this type of tobacco is the legend of exports in the world (Noveleta, 2011).

Challenges and opportunities for policy implementation of control regulation of addictive substances such as tobacco products for health in District of Jember are divided into 3 (three) topics: context, content, and actors which are the components in the approach to triangular analysis of policy. It is expected that this approach obtained a picture of how much is the effectiveness of the policy goals and the impacts of the policy on stakeholders, particularly those in District of Jember.

**Context**

According to Collin (in Ayuningtyas, 2014: 62), "A context describes the condition of a country or community where a health policy will be applied and be based to reveal the backgrounds of the country itself as well as to understand the causes of health problems (socio-economic, cultural problems) which in turn form the foundation of the implementation of health policy analysis ". The context of the Government Regulation No. 109 of 2012 is to carry out the mandate of Law Number 36 of 2009 on health where the implementation of the control on the use of materials that contain addictive substances such as tobacco products for health is directed in order not to disturb and endanger the health of individuals, families, communities, and the environment.

In another aspect, tobacco and products derived from tobacco have long been complex problems, not only in regard to health but also a matter of economic, employment, political, and social culture problems. The problems associated with tobacco and products resulted from tobacco at national level are due to issues of health, employment, tobacco farmers, taxes and excises, protection of farmers, which are not infrequently have a long impact on the nation's socio-economic problems. Meanwhile, in the international scope, this relates to foreign investment, copyright, and culture which also have economic and even political impacts. In national and international atmosphere, people have long been familiar with tobacco as an ingredient used to make cigarettes (Mulyono, 2011).

Tobacco production in the District of Jember fluctuates from year to year. Data from Jawa Timur dalam Angka (East Java in Figures 2014) published by BPS, Central Bureau of Statistic of East Java Province) show the following information:

<table>
<thead>
<tr>
<th>No</th>
<th>Year of Production</th>
<th>Production Amount (in Ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2010</td>
<td>7,235</td>
</tr>
<tr>
<td>2</td>
<td>2011</td>
<td>15,846</td>
</tr>
<tr>
<td>3</td>
<td>2012</td>
<td>31,284</td>
</tr>
<tr>
<td>4</td>
<td>2013</td>
<td>18,297</td>
</tr>
</tbody>
</table>

Source: Jawa Timur dalam Angka (2014)
In the short-term analysis, the impacts of the restriction policy of tobacco products do not much affect the tobacco production in District of Jember. However, in the long term, if the process of socialization and education to community members about the dangers of cigarettes is more and more massive, it will certainly reduce the demand for tobacco production. So, it is necessary to provide an alternative to tobacco crops or the tobacco use in addition to cigarettes.

Content
If seen carefully, the content of this policy does not directly ban the production of tobacco or instruct the tobacco-based goods manufacturers to stop production their business. The policy emphasizes preventive measures and protection against certain community groups (the population of productive age, children, adolescents, and pregnant women) from the dangers of smoking and cigarette smoke. It is described in Article 8 on the implementation of control including: production and importation, circulation, special protection for children and pregnant women, and non-smoking area.

The arrangement of production and importation of tobacco products emphasizes the legality of operations and arrangement of cigarette content to minimize the dangers of smoking as well as the un-provocative appearance or packaging of tobacco products. The management of production and importation is fairly well understood by tobacco farmers in District of Jember. This is inferred from the statement of the chairman of Indonesian Tobacco Farmers Association (APTI) Jember (2013) that "... The position of the manufacturer itself is only to produce and the levels of pesticide have been tested; if above the threshold, the products will directly be rejected, either for Na-oogst tobacco for cigars and tobacco for cigarettes and others ..... ".

Restrictions on the circulation of tobacco products, especially the ban on sales to children under the age of 18 and pregnant women, have not been gaining the attention of government in District of Jember. Similarly, the anti-smoking area also does not have a legal basis in the form of the Regional Regulations. The implementation is still simultaneous and has not been massive in which the initiatives have been made only by particular individuals or institutions that confirm as smoke-free institutions. Technical guidance for the implementation in the region and sanctions is needed to improve the effectiveness of government policy.

Security in certain groups of people from the dangers of smoking can be accepted and understood by APTI members. They provide records not to let this rule be used only as a weapon for manufacturers of tobacco and tobacco-based products on a large scale either in or out of the country that have impacts on tobacco farmers and the processed products in the region. Demand reduction pursued by the policy does not necessarily decrease the number of smokers in District of Jember. Based on the results of Basic Health Research 2013 in East Java province, it was found that the proportion of smokers (age above 10 years) in District of Jember was above the average value of the proportion of East Java (23.9). Meanwhile, the average number of cigarettes smoked per day was slightly below the average of East Java (11.5 pieces per day).

Actor
Actor is a term used to refer to individual, organization or even country as well as their actions that affect policy. The influence of actors can be positive or negative on the policy. Based on the information obtained from the research informants, the actors in the government regulation number 109 of 2012 for the area in District of Jember that can be called the perpetrators of the policy are the local government, District Legislative
Board, District Health Office, Department of Industry and Trade, agricultural institutions, Department of Agriculture, Department of Forestry, tobacco industry or tobacco products entrepreneurs or businessmen of cigarette, tobacco farmers, groups in the tobacco farmer associations, health coalition, tobacco quality certification and testing agency and also smokers. The actors of the local government and the agencies under its management on the implementation of Government Regulation (PP) number 109 of 2012 in District of Jember have not yet well-coordinated. Each still works partially in their own sector without considering other sectors work. The socialization of policy has also not been known by other stakeholders. Therefore, the government policy has not been part of the local agenda which is considered urgent in the implementation.

CONCLUSIONS

The implementation of Government Regulation number 109 of 2012 in District of Jember has not been running well. The series of local rules also have not been owned to regulate the control of materials containing addictive substances such as tobacco for health adapted to the condition in Jember. The fundamental thing to accommodate two opposing interests is good communication between all stakeholders of this policy. The local government in accordance with its authority is responsible for arranging, organizing, developing, supervising and monitoring the control of materials containing addictive substances such as tobacco products for health and can take a role as an initiator.

REFERENCES


Sujatmiko, 2008. Pemasukan Negara Dari Cukai Tembakau


SUPERVISORY RELATIONSHIP OF MIDWIFERY SUPERVISION IN PRIMARY HEALTH CARE SETTING AT KUPANG, NUSA TENGGARA TIMUR PROVINCE OF INDONESIA

Idawati Trisno

Fakultas Kedokteran Universitas Nusa Cendana, Jl. Adisucipto, Penfui, Kupang, NTT - 85000
Email: dr.ida70@gmail.com

ABSTRACT

Midwives is crucial health personnel in delivering midwifery care at Primary Health Care, especially in Nusa Tenggara Timur (NTT) which has limited doctors. However, midwives’ performance in delivery care still not optimal, indicates by the the low coverage of emergency obstetric care (36%), and low scoring of normal delivery care performance. Lack of competences and motivation of midwives, and ineffective midwifery supervision, has caused this condition. Quality of supervisory relationship may contribute to the ineffectiveness of midwifery supervision. This study aimed to identify type of supervisory relationship between midwives and her supervisors at PHC of Kupang, NTT. This is a descriptive and cross-sectional study, with 40 sample supervised midwives selected randomly from 10 PHC. Supervisory Relationship Questionnaire (SRQ) developed by Palomo (2010) was used, consist of 6 aspects of Supervisory Relationship and differ as evaluative and facilitative type.

Results shows that from the perspective of supervised midwives, supervisory relationship used by their supervisors were 50% evaluative type, 22.5% facilitative type, and 27.5% combination type. There is a moderate correlation between characteristics of midwives (age, education, length of working, and ethnic difference) with their perception of supervisory relationship (R=0.53). Supervised midwives perceived that their supervisors mostly use evaluative type of supervisory relationship in midwifery supervision. Whereas many supervision theories say that facilitative type of supervisory relationship will provide supportive environment for professional learning through reflective practice and will result in better work performance. Thus, further study is needed to examine the impact of supervisory relationship on midwives’ performance.

Keywords: Midwifery Supervision, Supervisory Relationship, Primary Health Care

INTRODUCTION

Midwives have an important role in delivering midwifery care at Primary Health Care (PHC), especially in Nusa Tenggara Timur (NTT) which has limited doctors. Data from NTT Provincial Health Office (PHO) mention that in 2015, number of doctors working at PHC in NTT is 359, or 8 doctors for every 100,000 people (Bidang Kesehatan Masyarakat Dinkes NTT, 2015). This doctor and population ratio is still low according to national standar, which is 40 doctors for every 100,000 people. Indonesia Basic Health Research 2013 stated that proportion of antenatal and delivery care provided by midwives still quite high (87.8% and 68.6%), compared to obstetrician (11.1% and 18%) or GPs that provided only 0.7% and 0.5% of the care (Badan Litbangkes
RI, 2013). Data from Indonesia Demography Health Survey (IDHS) 2012 also mention that in NTT Province, most of deliveries were provided by midwives and TBAs (46% and 29.9%) whereas obstetrician and GPs only provided 7.5% and 3.3% of delivery care (Badan Pusat Statistik, 2013).

Coverage of delivery care is one indicator of midwives’ performance. Indonesia Health Peofile 2012 revealed that coverage of delivery care in NTT was 69.4% - still far below the national target of 85% (Kemenkes RI, 2013). Other indicators are performance of normal delivery care and obstetric emergency care. Table 1 show the assessment result of normal delivery care in 2012. The assessment was done in 20 districts/cities from 10 selected provinces in Indonesia including NTT, and found that performance of normal delivery care at hospitals and PHCs still low (62% and 65%). Performance measured in this assessment was the percentage of appropriateness to normal delivery care standard, if more than 80% considered as good, and <60% considered as poor (Direktorat Bina Kesehatan Ibu Dirjen GKIA - Kemenkes RI, 2012).

Another research was done in the management of obstetric complication in NTT on 2015. The findings was that PHCs can only managed 36% of total obstetric complication cases, of that 30% was not managed according to the standard care. 46% of obstetric pre referral cases was also treated inappropriately (Trisno, Dayal & Hort, 2015).

The above data and research findings indicate that midwives’ performance in delivery care in NTT still not optimal. If not resolved, it will hamper the quality of delivery care at PHC and may further impact in the increasing of maternal death.

Blumberg & Pringle (1982) stated that individual performance is depending on 3 dimensions that influencing each other, that is capacity to perform, willingness to perform and opportunity to perform. Similar to that, Gibson (2012) mention that individual performance may influenced by ability, motivation and working condition. Based on the theories, it was assumed that midwives’ low performance might caused by several factos as lack of competences and motivation of midwives, and ineffective midwifery supervision.

Table 1. Performance of Normal Delivery Care at Hospitals and PHCs in 20 Districts/Cities in Indonesia on 2012

<table>
<thead>
<tr>
<th>NORMAL DELIVERY CARE</th>
<th>HOSPITAL</th>
<th>PUSKESMAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melengkapi riwayat medis</td>
<td>68.6%</td>
<td>61.4%</td>
</tr>
<tr>
<td>Melengkapi pemeriksaan fisik umum dan obstetrik</td>
<td>52.1%</td>
<td>57.3%</td>
</tr>
<tr>
<td>Menggunakan partograf</td>
<td>41.0%</td>
<td>68.3%</td>
</tr>
<tr>
<td>Menggunakan kardiotokografi (CTG)</td>
<td>19.0%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Melakukan perawatan kala satu persalinan</td>
<td>73.8%</td>
<td>83.8%</td>
</tr>
<tr>
<td>Melihat tanda dan gejala kala dua</td>
<td>80.0%</td>
<td>85.0%</td>
</tr>
<tr>
<td>Menyiapkan persiapan persalinan</td>
<td>60.6%</td>
<td>65.8%</td>
</tr>
<tr>
<td>Menastikan pembukaan lengkap</td>
<td>72.5%</td>
<td>77.5%</td>
</tr>
<tr>
<td>Menastikan kondisi janin baik</td>
<td>77.5%</td>
<td>75.0%</td>
</tr>
<tr>
<td>Mendokumentasikan hasil pemeriksaan</td>
<td>20.0%</td>
<td>42.5%</td>
</tr>
<tr>
<td>Menyiapkan ibu dan keluarga untuk membantu proses pimplinan meneran</td>
<td>63.8%</td>
<td>79.4%</td>
</tr>
<tr>
<td>Melakukan persiapan persiapan kelahiran bayi</td>
<td>67.5%</td>
<td>79.4%</td>
</tr>
<tr>
<td>Menolong kelahiran bayi</td>
<td>76.7%</td>
<td>85.4%</td>
</tr>
<tr>
<td>Melakukan penanganan bayi baru lahir</td>
<td>64.2%</td>
<td>74.6%</td>
</tr>
<tr>
<td>Melakukan</td>
<td>55.3%</td>
<td>53.1%</td>
</tr>
</tbody>
</table>
The importance of supervision in improving individual and organization performance was stated by Macneil (2001) in El-Kot & Leat (2008). Supervisor who takes role as facilitator can increase opportunity for informal learning through knowledge sharing, thus may improve performance. In line with that, Satava & Weber (1998) in El-Kot & Leat (2008) also mention that a good supervisor is one that could coach, supervise and motivate people to perform better. Research by Fort & Voltero (2004) found that competences, rewards, and performance feedback giving by supervisor, have strong association with performance of antepartum and postpartum care.

Midwifery supervision had been implemented in NTT since 2010 as part of national program. However, the impact towards midwives’ performance was not obvious. Researcher assumes that supervisory relationship is one of the crucial factor for successful supervision in NTT. This assumption based on the fact that NTT is a collective community, which value relationship with others including their supervisors more than their own interest, and can even sacrifice their private need or goals if it may disturb the harmony of that relationship (Hofstede, 2001 in Ho & Nesbit, 2009). Thus, supervisory relationship may contribute to the effectiveness of midwifery supervision. However, NTT consist of many ethnic that conflict in relationship could emerge easily. Thus, if supervisor can build good relationship with their supervisee, its more likely supervisee will try their best to perform better for the sake of that relationship.

This study was conducted to gain a brief description of supervisory relationship in midwifery supervision at PHC in Kupang City, NTT. It is aim to identify the type of supervisory relationship used by supervisors according to supervisee perspective. The study questions were: 1) What is the type of supervisory relationship used by supervisor according to midwives’ perception? and 2) Is midwives’ characteristics influence their perception of supervisory relationship?

**MATERIAL & METHOD**

This is a descriptive and cross-sectional study, conducted in February 2015 at Kupang City, NTT Province of Indonesia. Respondents were 50 supervised midwives selected randomly from 10 PHC. Inclusion criteria of the respondents were: midwives that already work at least 1 year at PHC, and also had received midwifery supervision at PHC.

Supervisory Relationship Questionnaire (SRQ) developed by Palomo (2010) was used to measure supervisory relationship. It consists of 6 aspects of Supervisory Relationship which are: safe-base, structure, commitment, reflective practice, role model, and formative feedback. The 6 aspects describe two most important characteristics of supervisory relationship, namely facilitative and evaluative type. The first 3 aspects (safe-base, structure and commitment) are reflecting facilitative type of supervisory relationship, while the other 3 remaining aspects are reflecting the evaluative type.
The SRQ questionnaire was validated using SPSS statistical tools, and using the value of Cronbach’s alpha, only 57 items were proven reliable out of the 67 original items.

Data collected through interview using the SRQ questionnaire above. Besides supervisory relationship data, other individual data such as age, ethnic, education, and length of working time, also collected. Data was analysed using descriptive statistics to know which supervisory relationship type was the most commonly used by the supervisors. A linear regression also used to explore the correlation between individual characteristics and their perception of supervisory relationship.

RESULT

From 50 respondents, only 40 could be included in the analysis. 10 respondents did not match the inclusion criteria or did not answer the questionnaires completely. Of the total 40 samples, the characteristics of respondent were described as follows:
1) Most of midwives’ age is between 30-39 years (52.5%), 22.5% between 40-49 years, 15% more than 50 years, and only 10% less than 29 years.
2) In terms of education level, 90% midwives have a bachelor degree, only 1 midwife did not have bachelor degree, and 3 midwives have undergraduate degree in midwifery.
3) Length of working: 37.5% midwives have been working for 6-10 years, 22.5% have working for 11-15 years and for less than 5 years, and 17.5% have working more than 16 years.
4) Related to the ethnic difference between respondents and their supervisors, 72.5% have ethnic difference and only 27.5% have the same ethnic.

Result shows that from the perspective of supervised midwives, supervisory relationship used by their supervisors were 50% evaluative type, 22.5% facilitative type, and 27.5% combination type. There is a moderate correlation between characteristics of midwives (age, education, length of working, and ethnic difference) with their perception of supervisory relationship (R=0.53) as shown in below figure.

In model summary below, the R square value was 0.281. This can be interpreted that the characteristics of supervised midwives can only predict 28.1% of supervisory relationship type. There are 71.9% of other variables that may influence the supervisory relationship type which not included in this model.

Using F-test with level of significance α<0.05, it is found that all four individual characteristics simultaneously had significant influence towards perception of supervisory relationship (α=0.018).

ANOVA*

T-test also used to find out if each individual characteristic is partially related to the perception of supervisory relationship. The result shows that using level of significance α<0.05, only ethnic
difference has significant influence towards perception of supervisory relationship \((\alpha=0.023)\).

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>2.262</td>
<td>.866</td>
<td>2.613</td>
</tr>
<tr>
<td></td>
<td>umurbid</td>
<td>-.267</td>
<td>.153</td>
<td>-1.744</td>
</tr>
<tr>
<td></td>
<td>edubid</td>
<td>-.499</td>
<td>.337</td>
<td>-1.481</td>
</tr>
<tr>
<td></td>
<td>lamakrjbid</td>
<td>.342</td>
<td>.200</td>
<td>1.707</td>
</tr>
<tr>
<td></td>
<td>etnis</td>
<td>.548</td>
<td>.231</td>
<td>2.376</td>
</tr>
</tbody>
</table>

**DISCUSSION**

Some studies had mentioned the importance of interaction in supervision known as supervisory relationship. Ellis (1991) in Smothers (2009) said that according to the supervisee, supervisory relationship is the most important element in supervision, and it will contribute to the capacity development of supervisee. The most effective supervision possibly is supervision with the focus on supportive or facilitative approach, community mentoring, and problem solving or quality improvement, although the supported evidence still vague (Hill et al., 2014).

Finding from this study revealed that supervised midwives perceived their supervisors mostly use evaluative type of supervisory relationship in midwifery supervision. Whereas many supervision theories and researches said that facilitative type of supervisory relationship will provide more supportive environment for professional learning and will result in better work performance. For example, Elkot (1998) conducted a study on staff’s perception towards supervisory facets, and found out that the most important supervisory facets were facilitation and support from supervisors to do their job. Other studies also mention that effective supervision process should be able to create supportive environment for supervisee to do reflective practice, develop clinical practice, and supporting each other (Winstanley & White, 2003; Bond & Holland, 2010).

Other findings regarding individual characteristic of supervisee (age, education, length of working and ethnic difference), known also as demographic characteristic, show that their only influence 28% of supervisory relationship perception. Some studies mentioned the role of other individual variables in relation to the supervisory relationship. Holloway & Wampold (1986) said that supervisee’s ability (technical and communication ability) will affect his/her supervisory relationship. Supervisee with low conceptual level prefer structured environment, while those who have high conceptual level less worry about evaluation and want more critical feedback from supervisors.

Holloway (1995) in Corey, et al. (2010) also stated that individual characteristic of supervisee such as: self-confidence, openness, willingness to receive feedback, and self-awareness, are important in supervision. Similar to this, Ryan (2008) mentioned the importance of willingness to learn in the supervision process, which can be shown in some behaviour such as keen to learn from experiences, asking for feedback, and have responsibility for own professional development. Besides, supervision involved supervisor and supervisee, and so characteristic of both parties might affect supervisory process. Supervisor’s characteristic had been stated in
Donohue (2001) to have important effect on supervisory process; of which Kilbourn (1990) mention about commitment of time and effort from supervisor, Brock (1981) mention collegial attitude towards supervisee, and Duke & Stiggins (1986) mention credibility and trust as the important characteristic of supervisor which will affect the supervisory process.

CONCLUSION

This study was meant as preliminary study to get a brief description of supervisory relationship in midwifery supervision at PHC. Whether evaluative or facilitative type of supervisory relationship can better improve performance, still need more investigation. Result of this study will contribute to further study design which aim to provide better evidence on the impact of supervisory relationship towards midwives’ performance and quality improvement of midwifery care.

Since this study only explore demographic characteristic of supervisee in relation to their perception on supervisory relationship, further study need to be done to get better understanding on more complete aspects of supervisory relationship. Both individual characteristics of supervisee and supervisor as stated in previous studies and literatures, could be tested whether it will affect the supervisory relationship in midwifery supervision at PHC in NTT.

REFERENCES


THE EFFECT OF CUPPING THERAPY TO BLOOD PRESSURE, BLOOD GLUCOSE, CHOLESTEROL AND URIC ACID LEVEL IN MATARAM CUPPING CLINIC

Suharmanto

Student of Doctoral Program Health Science, Universitas Airlangga Surabaya
Email: suhar_manto46@yahoo.com

ABSTRACT

Cupping therapy is a process of removing dirty blood or harmful toxins from the body through the skin surface with a way to suck. Toxins are deposits of toxic or chemical substances that cannot be broken down by the body. World Health Organization recorded in Indonesia that in the year 2015 there was an increase in men and women suffering from gout, hypertension, diabetes, high uric acid and cholesterol. The purpose of this study was to determine the effect of cupping therapy on blood pressure, blood sugar, cholesterol and uric acid levels in Mataram Cupping Clinic (MCC) 2016.

This was a correlative analytic study. The populations were patients who did cupping therapy, and samples were recruited by accidental sampling technique in August 2016. Statistical analysis used was dependent T-test. The results showed that there was a difference in the average value of systolic blood pressure, diastolic blood pressure, blood sugar levels before and after cupping. While the levels of uric acid and cholesterol levels did not differ significantly before and after cupping.

It can be suggested that in some cases, cupping therapy can make the body be more healthy condition. The cupping therapy has shown to lower blood pressure, blood sugar, cholesterol, uric acid levels. Therefore, people can make cupping as an alternative therapy to overcome the interference due to the symptoms of hypertension, diabetes, high cholesterol and uric acid.

Keywords: Cupping Therapy, Blood Pressure, Blood Sugar, Cholesterol, Uric Acid Level

INTRODUCTION

Cupping therapy is a process of removing dirty blood or harmful toxins from the body through the skin use cupping set by suck a peripheral blood. Cupping therapy can be used to reduce the incidence of gout, hypertension, hypercholesterolemia and diabetes. World Health Organization (WHO) recorded in Indonesia that in the year 2015 there was an increase in men and women suffering from gout, hypertension, diabetes, high uric acid and cholesterol.

Based on the life expectancy, the proportion of the Indonesian population aged 55 years in 2000 was 9.37% and by 2010 that proportion was 12%. The increase in life expectancy will increase the number of elderly that will impact the shift pattern of disease in the community from infectious diseases to the degeneration disease. The prevalence of infectious diseases has decreased, while non-communicable diseases tend to increase. Non-communicable diseases can be classified into one main group with the same risk factors (common underlying risk factors) such as cardiovascular, stroke, diabetes mellitus, chronic obstructive pulmonary diseases, and cancers. The risk factors include tobacco...
consumption, high consumption of fat less fiber, lack of exercise, alcohol, hypertension, obesity, high blood sugar and high blood fat.

Cupping therapy is an option for individuals that can treat someone from body imbalance. Cupping therapy just take the peripheral blood for various types of treatment of disease. Differences of any type of disease only at points that became the target blood draw. Most of the blood is taken in the neck, legs, and back.

Preliminary study in Mataram Cupping Clinical (MCC) in July 2016, as much as 10 patients in MCC, after cupping, showed that a decline in blood pressure, lowering cholesterol levels and decreased levels of uric acid. The researcher interested in conducting research on the influence of cupping therapy on blood pressure, blood sugar, cholesterol and uric acid levels in MCC (2016). The aim of this study is to analyze the influence of cupping therapy on blood pressure, blood sugar, cholesterol and uric acid levels in MCC (2016).

MATERIAL & METHODS

The design used in this research is a correlative analytic research with cross sectional approach. The population used in the study was all patients who do cupping therapy. Samples were taken by accidental sampling technique, in which patients who visit the MCC, study was conducted in August 2016.

The independent variables in this study were cupping therapy. While the dependent variable in this study is blood pressure, blood sugar, cholesterol, uric acid levels. Data collection tool used are sphygomanometer, stethoscope, glucometer, cholesterol sticks, uric acid sticks, and the measurement sheet.

Univariate analysis presents the average values of blood pressure, cholesterol, and blood sugar and uric acid levels before and after cupping therapy. The bivariate analysis using dependent t-test for known differences in average blood pressure, blood sugar, cholesterol and uric acid levels before and after cupping therapy.

RESULT

Table 1. Univariate Analysis Before and After Cupping

<table>
<thead>
<tr>
<th>Variable</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic Blood Pressure</td>
<td>Before</td>
<td>110</td>
<td>150</td>
<td>130</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>100</td>
<td>140</td>
<td>122</td>
<td>16.19</td>
</tr>
<tr>
<td>Diastolic Blood Pressure</td>
<td>Before</td>
<td>70</td>
<td>100</td>
<td>84</td>
<td>8.43</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>60</td>
<td>90</td>
<td>75</td>
<td>8.49</td>
</tr>
<tr>
<td>Blood Glucose Level</td>
<td>Before</td>
<td>88</td>
<td>207</td>
<td>126.57</td>
<td>40.12</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>74</td>
<td>162</td>
<td>100.71</td>
<td>28.54</td>
</tr>
<tr>
<td>Uric Acid Level</td>
<td>Before</td>
<td>4.2</td>
<td>15</td>
<td>9.91</td>
<td>3.60</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>5.3</td>
<td>10</td>
<td>8.5</td>
<td>1.65</td>
</tr>
<tr>
<td>Cholesterol Level</td>
<td>Before</td>
<td>138</td>
<td>230</td>
<td>185</td>
<td>58.76</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>120</td>
<td>242</td>
<td>183.8</td>
<td>5</td>
</tr>
</tbody>
</table>

Based on Table 1 the average value before cupping fof systolic blood pressure was 130 mmHg, diastolic blood pressure by 84 mmHg, blood sugar levels of 126.57 mg/dl, uric acid levels, 9.91 mg/dl and cholesterol levels by 185 mg/dl. While the results after the cupping in systolic blood pressure of 122 mmHg, diastolic blood pressure by 75 mmHg, blood sugar levels 100.71 mg/dl, the uric acid level of 8.5 mg/dl and cholesterol levels of 183.8 mg/dl. The bivariate analysis aimed to determine the value of the average difference before and after cupping.

Table 2. Bivariate Analysis Before and After Cupping

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic Blood Pressure</td>
<td>Before</td>
<td>130</td>
<td>14.14</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>122</td>
<td>16.19</td>
<td>10</td>
</tr>
<tr>
<td>Diastolic Blood Pressure</td>
<td>Before</td>
<td>84</td>
<td>8.43</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>75</td>
<td>8.49</td>
<td>10</td>
</tr>
<tr>
<td>Blood Glucose Level</td>
<td>Before</td>
<td>126.57</td>
<td>40.12</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>100.71</td>
<td>28.54</td>
<td>7</td>
</tr>
<tr>
<td>Uric Acid Level</td>
<td>Before</td>
<td>9.91</td>
<td>3.60</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>8.5</td>
<td>1.65</td>
<td>7</td>
</tr>
<tr>
<td>Cholesterol Level</td>
<td>Before</td>
<td>185</td>
<td>44.46</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>183.8</td>
<td>58.76</td>
<td>5</td>
</tr>
</tbody>
</table>
Based on the above results, it can be seen that there was a difference average value of systolic blood pressure, diastolic blood pressure, and blood sugar levels before and after cupping. While the levels of uric acid and cholesterol levels did not differ significantly before and after cupping.

**DISCUSSION**

Cupping therapy is a blood cleansing and air from body, with suck toxic in the body through the skin, with cupping therapy (therapy glasses). Advances in technology make it easier cupping tools and practical in use. So, how to apply the tools of creativity also needs to find a cure for the pain. At first cupping only known in two ways, wet and dry cupping.

Various cupping that was known are wet and dry cupping. Wet cupping used to suck some blood from body. This method is a way of bloodletting extravasation static or dirty blood can harm the body if not removed. Wet cupping is dry cupping are getting additional treatment, blood is removed by means of a cupped area sectioned on. The concept of wet cupping is damaged blood is the source of disease and health problems. In the blood are red blood cells were older (aged over 120 days), deposits of blood, as well as various negative elements that get into the blood through various means, including the influence of drugs and chemical pollution are diverse.

This damaged blood rotates to follow the blood circulation, and tend to settle and gather in certain places in the upper back. The characteristics are a weak flow of blood and slow motion in the shoulders and neck veins, as well as in other parts of the body. When a person is free from damaged blood, the body free from harmful substances that are not needed by the body. Furthermore, the stronger blood flow was clean and contains red blood cells throughout the body organs. Body regained its natural balance, and increasing immunity.

Dry cupping is simply put glass cupping with air over a particular body part (usually on the back) that could facilitate the flow of blood. This method is used to relieve pain or flex the muscles, especially in the back of the body.

Benefits cupping are clean the blood from toxins, normalize blood pressure and reduce calcification of blood vessels (arteriosclerosis), relieve dizziness, headache, migraines and toothaches, eliminate spasms and cramps that occur in the muscles, improving the permeability of blood vessels, useful for people with asthma, pneumonia, and angina pectoris, assist in the treatment of the eye, for women, it can help treat disorders of the uterus and the cessation of menstruation, eliminate sore shoulder, chest and back, helps to overcome laziness, lethargy and sleep, can cure gout and rheumatism, it can cope with skin disorders, allergies, acne and itching, able to overcome inflammation of the lining of the heart and kidney inflammation, overcoming poisoning and can heal festering wounds and ulcers.

Rini, et al. (2014) on the effect of cupping on cholesterol levels was found that the average value of cholesterol levels before the intervention was 200.61 while cupping values obtained after average cholesterol levels of 197.94. This proves that the cupping therapy reduce cholesterol levels. Rahman (2016), about the effects of cupping on blood pressure was found that the average value of systolic blood pressure reduction after doing cupping is 15.6 mmHg, while the average drop in diastolic blood pressure was 9.40 mmHg after cupping. This proves that the cupping therapy decrease blood pressure.

Hidayaturrofiah, et al. (2014), about the effect of cupping on uric acid levels showed that the average value of uric acid
levels prior to cupping after bruise is 9.42 while the average value obtained uric acid levels of 9.11. This proves that the cupping can decrease uric acid levels.

**CONCLUSION & RECOMMENDATION**

We conclude that the average value before cupping is a systolic blood pressure is 130 mmHg, diastolic blood pressure is 84 mmHg, blood sugar levels is 126.57 mg/dl, uric acid level is 9.91 mg/dl and cholesterol levels by 185 mg/dl. While the results after the cupping in systolic blood pressure is 122 mmHg, diastolic blood pressure is 75 mmHg, blood sugar level is 100.71 mg/dl, the uric acid level is 8.5 mg/dl and cholesterol level is 183.8 mg/dl. It can be seen that there is a difference average value of systolic blood pressure, diastolic blood pressure, and blood sugar levels before and after cupping. While the levels of uric acid and cholesterol levels did not differ significantly before and after cupping.

Based on the research results, it can be suggested to the people to carry out a bruise because in some cases, can make the body be more healthy condition. The cupping therapy has shown to lower blood pressure, blood sugar, cholesterol, uric acid levels, so that people can make a bruise as an alternative therapy to overcome the interference due to the symptoms of hypertension, diabetes, high cholesterol and uric acid.

**REFERENCES**


