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Jurnal Ners

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- FACTORS AFFECTING THE COMPLIANCE OF MYANMAR NURSES IN PERFORMING STANDARD PRECAUTION
- THE EFFECTIVENESS OF MANGOSTEEN PEELS EXTRACT AGAINST THE TOTAL OF T LYMPHOCYTES IN HIV PATIENTS
- QUALITY IMPROVEMENT MODEL OF NURSING EDUCATION IN MUHAMMADIYAH UNIVERSITIES TOWARD COMPETITIVE ADVANTAGE
- NURSE BEHAVIOR IN IMPLEMENTATION OF DIABETES MELLITUS EDUCATION BASED ON THEORY OF PLANNED BEHAVIOR
- CONSUMPTION OF FRUIT AND VEGETABLE WITH RISK OF OBESITY IN SCHOOL-AGE CHILDREN
- DETERMINANTS FACTORS OF VASECTOMY METHOD SELECTION
- MODELING PARTICIPANT TOWARD SELF-CARE DEFICIT ON SCHIZOPHRENIC CLIENTS
- DEVELOPMENT OF TRANSACTIONAL COMMUNICATION MODEL FOR MIDWIFE AND POSTPARTUM MOTHER ON EXCLUSIVE BREASTFEEDING
- PSIKONEUROIMUNOLOGY APPROACH TO IMPROVE RECOVERY MOTIVATION, DECREASE CORTISOL AND BLOOD GLUCOSE OF DM TYPE 2 PATIENTS WITH DHIKR THERAPY
- HEALTH CARE-SEEKING BEHAVIOUR OF COASTAL COMMUNITIES IN BANYUWANGI, INDONESIA: RESULTS OF A CROSS-SECTIONAL SURVEY
- THE ADAPTATION MODEL OF CARE GIVER IN TREATING FAMILY MEMBERS WITH SCHIZOPHRENIA IN KEDIRI EAST JAVA
- COPING MECHANISM OF CAREER WOMEN WITH BREAST CANCER
- PROLANIS IMPLEMENTATION EFFECTIVE TO CONTROL FASTING BLOOD SUGAR, HbA1c AND TOTAL CHOLESTEROL LEVELS IN PATIENTS WITH TYPE 2 DIABETES
- ENCULTURATION IN THE LIFE PATTERN OF BREAST CANCER PATIENTS: AN ETHNO-NURSING STUDY ON SUNDANESE WOMEN
- DEVELOPMENT OF PERFORMANCE ASSESSMENT INSTRUMENT FOR NURSES BASED ON *WEB* IN INPATIENT UNIT
- RED ROSELLA TEA AND AVOCADO AS SIMVASTATIN THERAPY SUPPORT REDUCE TOTAL CHOLESTEROL
- FACTORS RELATED TO OPEN DEFECATION BEHAVIOR AMONG SCHOOL AGE CHILDREN IN WEST LOMBOK
- BULLYING BEHAVIOUR OF ADOLESCENTS BASED ON GENDER, GANG AND FAMILY
- PREVENTING MEDICATION ERROR BASED ON KNOWLEDGE MANAGEMENT AGAINST ADVERSE EVENT
- JIGSAW PUZZLE IMPROVE FINE MOTOR ABILITIES OF UPPER EXTREMITIES IN POST-STROKE ISCHEMIC CLIENTS

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Table of Content

I Description

II Focus and Scope

III Editorial Board

IV Author Guidelines

V Title Page (download HERE)

VI Main Manuscript Template (download HERE)

VII Copyright Transfer Agreement (download HERE)

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The text should be structured as follows: introduction, methods, results, discussion, and conclusion. Footnotes are not advisable; their contents should be incorporated into the text. Use only standard abbreviations; the use of nonstandard abbreviations can be confusing to readers. Avoid abbreviations in the title of the manuscript. The spelled-out abbreviation followed by the abbreviation in parenthesis should be used on the first mention unless the abbreviation is a standard unit of measurement. If a sentence begins with a number, it should be spelled out.

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Table 1. Effects of plant growth regulator types and concentrations on embryogenic callus induction from leaf tip explants of *D. lowii* cultured in ½ MS medium supplemented with 2.0 % (w/v) sucrose under continuous darkness at temperature of 25 ± 2 ºC after 60 days of culture

Table 3. Maternal and child health care-seeking behaviour for the last pregnancy in women aged 15 – 45 years old

Type of care	Age Groups (Years)							
	<30		30 - 39		40 - 45		All Age	
	n	%	n	%	n	%	n	%
Place for antenatal care								
Village level service (Posyandu, Polindes or Poskesdes)	1	9.1	1	4.6	1	3.5	3	4.8
District Level service (Puskesmas/Pustu)	2	18.2	7	31.8	1	3.5	10	16.1
Hospital, Clinics, Private Doctor or OBGYN	1	9.1	4	18.2	2	6.9	7	11.3
Private Midwife	7	63.6	10	45.5	25	86.2	42	67.7
Place of Birth								
Hospital	5	50.0	5	22.7	4	13.8	14	23.0
Birth Clinic/Clinic/Private health professional	5	50.0	15	68.2	21	72.4	41	67.2
Puskesmas or Pustu	0	0.0	2	9.1	0	0	2	3.3
Home or other place	0	0.0	0	0	4	13.8	4	6.6
Ever breastmilk								
No	1	9.1	1	4.6	1	3.5	3	4.8
Yes	10	90.9	21	95.5	28	96.6	59	95.2
Exclusive breastfeeding								
No	4	36.4	10	45.5	18	62.1	32	51.6
Yes	7	63.6	12	54.6	11	37.9	30	48.4

DISCUSSION (Times New Roman 11)

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Conclusion should be explained clearly related to hypothesis and new findings. Suggestion might be added contains a recommendation on the research done or an input that can be used directly by consumer.

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TABLE OF CONTENT

1. FACTORS AFFECTING THE COMPLIANCE OF MYANMAR NURSES IN PERFORMING STANDARD PRECAUTION — 1-8
Sa Sa, Nursalam, Yulis Setiya Dewi

2. THE EFFECTIVENESS OF MANGOSTEEN PEELS EXTRACT AGAINST THE TOTAL OF T LYMPHOCYTES IN HIV PATIENTS — 9-13
Maria Dyah Kurniasari, Edi Dharmana, Hussein Gasem

3. QUALITY IMPROVEMENT MODEL OF NURSING EDUCATION IN MUHAMMADIYAH UNIVERSITIES TOWARD COMPETITIVE ADVANTAGE — 14-18
Abdul Aziz Alimul Hidayat, Musrifatul Uliyah, Sukadiono

4. NURSE BEHAVIOR IN IMPLEMENTATION OF DIABETES MELLITUS EDUCATION BASED ON THEORY OF PLANNED BEHAVIOR — 19-26
Nadia Rohmatul Laili, Sulistiawati, Ika Yuni Widyawati

5. CONSUMPTION OF FRUIT AND VEGETABLE WITH RISK OF OBESITY IN SCHOOL-AGE CHILDREN — 27-32
Agnes Sevelina Anggraeni, Tintin Sukartini, Kristiawati

6. DETERMINANTS FACTORS OF VASECTOMY METHOD SELECTION — 33-40
Esti Yunitasari, Retnayu Pradanie, Hardiansyah

7. MODELING PARTICIPANT TOWARD SELF-CARE DEFICIT ON SCHIZOPHRENIC CLIENTS — 41-48
Ah Yusuf, Hanik Endang Nihayati, Krisna Eka Kurniawan

8. DEVELOPMENT OF TRANSACTIONAL COMMUNICATION MODEL FOR MIDWIFE AND POSTPARTUM MOTHER ON EXCLUSIVE BREASTFEEDING — 49-59
Rekawati Susilaningrum, Sri Utami, Susilorini

9. PSIKONEUROIMUNOLOGY APPROACH TO IMPROVE RECOVERY MOTIVATION, DECREASE CORTISOL AND BLOOD GLUCOSE OF DM TYPE 2 PATIENTS WITH DHIKR THERAPY — 60-65
Rifka Pahlevi, Suhartono Taat Putra, Sriyono

10. HEALTH CARE-SEEKING BEHAVIOUR OF COASTAL COMMUNITIES IN BANYUWANGI, INDONESIA: RESULTS OF A CROSS-SECTIONAL SURVEY — 66-73
Susy K. Sebayang, Erni Astutik, Desak Made Sintha Kurnia Dewi, Ayik Mirayanti Mandagi, Septa Indra Puspikawati

11. THE ADAPTATION MODEL OF CARE GIVER IN TREATING FAMILY MEMBERS WITH SCHIZOPHRENIA IN KEDIRI EAST JAVA — 74-80
Byba Melda Suhita, Chatarina Umbul Wahyuni, Hari Basuki, Ah Yusuf

12. COPING MECHANISM OF CAREER WOMEN WITH BREAST CANCER — 81-87
Rosnani

13. PROLANIS IMPLEMENTATION EFFECTIVE TO CONTROL FASTING BLOOD SUGAR, HbA1c AND TOTAL CHOLESTEROL LEVELS IN PATIENTS WITH TYPE 2 DIABETES — 88-98
Musfirah Ahmad, Rini Rachmawaty, Elly L. Sjattar, Saldy Yusuf

14. ENCULTURATION IN THE LIFE PATTERN OF BREAST CANCER PATIENTS: AN ETHNO-NURSING STUDY ON SUNDANESE WOMEN — 99-107
Witdiawati, Laili Rahayuwati, Sheizi Prita Sari

15. DEVELOPMENT OF PERFORMANCE ASSESSMENT INSTRUMENT FOR NURSES BASED ON *WEB* IN INPATIENT UNIT — 108-112
Aprilia Nuryanti, Nursalam, Mira Triharini

16. RED ROSELLA TEA AND AVOCADO AS SIMVASTATIN THERAPY SUPPORT REDUCE TOTAL CHOLESTEROL — 113-118
Budi Artini, Elyana Asnar, Ika Yuni Widyawati

17. FACTORS RELATED TO OPEN DEFECATION BEHAVIOR AMONG SCHOOL AGE CHILDREN IN WEST LOMBOK — 119-125
Makhfudli, Praba Diyan Rachmawati, Saskiyanti Ari Andini

18. BULLYING BEHAVIOUR OF ADOLESCENTS BASED ON GENDER, GANG AND FAMILY — 126-132
Kadek Ayu Erika, Dian Atma Pertiwi, Tuti Seniwati

19. PREVENTING MEDICATION ERROR BASED ON KNOWLEDGE MANAGEMENT AGAINST ADVERSE EVENT — 133-141
Apriyani Puji Hastuti*, Nursalam, Mira Triharini**

20. JIGSAW PUZZLE IMPROVE FINE MOTOR ABILITIES OF UPPER EXTREMITIES IN POST-STROKE ISCHEMIC CLIENTS — 142-150
Kusnanto, Eska Dwi Prajayanti, Harmayetty

EDITORIAL

Nowadays, we live in globalization era, in which people worldwide can migrate easily to one place to another place and leads the emerging of multicultural society. In such society, culture difference can be sensitive issues regarding the ignorance towards other people's customs and beliefs. The lack of information about the cultures can lead to cultural stresses and cultural conflicts among health care professional and patients who have different cultures. In some cases, the patients misunderstand and feel frustrated about health care service because the nurses ignore their beliefs and values. Therefore, basic understanding of cross cultures is imperative for healthcare professionals, especially nurses, due to their intensive interactions with patients from diverse backgrounds.

To respond this issue, Madeleine M. Leininger had developed the Theory of Culture Care Diversity and Universality in the early 1960's as an essential guidance for nurses to discover and implement transcultural nursing practices. Indonesia as multi-culture country, as well as South East Asian countries, are potential places to implement transcultural nursing research. There are a lot of cultures related to health behavior and practices which have not been explored well. Regarding this problem, we encourage researchers to conduct research which generate evidence-based to reduce the gap between health care service and patients' cultures, local customs, or beliefs. Furthermore, we expect that in the future health care services can be more hospitable for patients with different cultures.

THE EFFECTIVENESS OF MANGOSTEEN PEELS EXTRACT AGAINST THE TOTAL OF T LYMPHOCYTES IN HIV PATIENTS

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ABSTRACT

Introduction: The Province of West Java is one of the highest HIV sufferers in Indonesia that has increased accumulatively in 2013 to 2014. This condition was proven that in 2014 West Java ranked 4th among the provinces with the highest HIV sufferers in Indonesia. HIV has main target to infect a cell that contains of receptor, CD4. CD4 examination routinely is very important to decide HIV replication process. Meanwhile, CD4 test in the laboratory is quite expensive and not always available in every health facilities. Mangosteen peels extract contains of xanthones as an antioxidant, which is needed for body as a prooxidant that can inhibit the replication of HIV and the activity was seen from the total number of lymphocyte. **Method:** The human experimental research has been done by Randomized Control Group Pretest-Post Test Design. There were 20 patients sample for each group. In group 1, HIV patients with ARV therapy were given mangosteen peels extract and in group 2, they were given placebo capsule. Wilcoxon Smith test and Mann-Whitney U test were used to determine the difference between group 1 and group 2. **Result:** There is no significant difference between lymphocytes (p: 0.102) to HIV patients with ARV in each group examination. Discussion: The ineffectiveness is caused by the phagocytosis and cytoxity of TNF through the increasing of free radicals in HIV patients.

Keywords: Mangosteen peels extract, lymphocytes

INTRODUCTION

Nowadays, one of the major public health problems for the world is an epidemic of Human Immunodeficiency Virus /HIV infection (Swity et al. 2016). In Indonesia, the number of HIV sufferers is increasing every year. West Java got 4th rank with the highest HIV sufferers among the provinces in Indonesia with the cumulative number of HIV cases: 9340 people, while the number of AIDS patients were reported until 2013 amounted to 4131 people (Spritia Y & KPA Central Java, 2014). Then, an increasing number of HIV/AIDS people were reported till September 2014 are 13.507 and people with HIV: 4.191.

This retrovirus changes ribonucleic acid (RNA) into deoxyribonucleate acid (DNA) after enter to the host cell. Viral genetic material inserted to the infected DNA cell. The main target is CD4, the cells that have receptors (Nakatani et al. 2002). Therefore, the ARV therapy and CD4 examination routinely in patients are very important to detect HIV viral replication process. Health services such as BJPS has helped people with HIV to get a free CD4 examination, but not all of them get these services (Swity et al. 2016). The CD4 examination is classified into expensive laboratory tests, especially if the examination is required as a routine examination. Moreover, it is not always available at each health facilities. The previous study by Swity (2016) reported that there was a significant correlation between the total numbers of T cell lymphocytes in patients with HIV in Hasan Sadikin Hospital, Bandung. It shows that the examination f immune cells (T cell lymphocytes) is also important when health facilities are limited (Swity et al. 2016). The reports from previous researchers informed that the elevation of T lymphocytes total count depicts the level of the immune system (Ghate et al. 2011). It has reported that the total number of T lymphocytes associated with the level of human body immunity, but the total number of T lymphocytes in immune relate to HIV patients are still rare. The number of T lymphocytes can replace in monitoring the treatment for HIV patients is not clear enough, but logically the total count of T lymphocytes had a scientific base in HIV patients immune monitor.

Mangosteen fruit is one of the diversity floras from Indonesia that has a potential to be a medical plant. The skin of mangosteen fruit contains of xanthones as an antioxidant that is needed in human body as a prooxidant balance (reducing radicals, oxidizing radicals, carbon entered, UV light, metal, etc.) that can inhibit the replication of HIV and the activity T lymphocyte as immune

cells play a role in balancing prooxidant (Chen et al. 1996). The medicinal plants can be adjuvant treatment. Researchers hope mangosteen peel extract as an antioxidant can be used as a complementary medicine jointly with the provision of antiretroviral drugs/ARV. The expectation from this study, there is an effectiveness of mangosteen peel extract to the total number of T lymphocytes in HIV with ARV therapy, to improve CD4 cell and also improve health services, especially to decrease the risk of co-infection in people with HIV.

METHODS

Experimental research in human used Double Blind Randomized Pretest-Post Test Control Group Design (HIV patients with antiretroviral therapy in RSUD Gunung Jati, Cirebon, West Java). The total number of respondents were 40 patients, chosen by inclusion and exclusion criteria. 40 patients were divided into 2 groups, treatment group and placebo group. Treatment group was 20 patients who got 90 capsules of mangosteen peel extract for each patient and placebo group was 20 patients who got 90 placebo capsules for each patient. Grouping was done by simple randomized sampling technique. All respondent consumed the capsule 3 times a day (in the morning, in the afternoon, and at night). Researchers also did the blood test twice for both groups. It was before and after getting the treatment for 30 days. The blood test was used to know the total number of lymphocyte differences between treatment group and placebo group.

The results of a descriptive analysis will be presented in tabular form.For identifying the differences between treatment and placebo group, the researcher used Mann-Whitney test and for pre and post test used Wilcoxon Smith test. Data is considered as a significant difference when the value ($p < 0.05$) with 95% confidence level. The study was conducted after obtained approval from Health Research Ethics Committee of Medicine Faculty, University of Diponegoro and dr. Kariadi, Semarang.

RESULTS

The basic characteristics of research subjects as shown in table 1 describes the same starting point in each group (treatment and placebo).

After determining the data equality and got the result of pre-post test examination, the changes of median value were presented from each group. The data was presented in median value because the data distribution was not normal. Table 2 showed that there was a decline median value in treatment group and placebo. Changes of this data will be the basis for comparative tests between pre and post-test in each group, as well as a comparison between the treatment and placebo group in pre-test and post-test.

Table 1. Characteristics of Basic Research Subjects

Characteristics	The total number of research subjects (n=40)	Treatment (n=20)	Placebo (n=20)	Difference test (*p*)
Age (±SD)	34,10+5,93	33,25±5,17	34,95±6,63	0,464
Sex (%)				0,744
Male	62,5	60	65	
Female	37,5	40	35	
The average of CD4 (mm3) (±SD)	406±148	373 ± 28	438 ± 36	0,172
Time using ARV (tahun) (±SD)	3,55+2,3	3,1±2,31	4,0±2,27	0,135
Weight (kg)	58,23±11,11	58,3±10,6	58,15±11,87	0,828
The number of T Lymphocite (cells/mm^3)	2066±728	1958±591	2175±844	

Table 02. Median Total Lymphocyte Total

Groups	*Pretest*	*Post Test*
Treatment	1879.50	1721
Placebo	2035	2025

The comparative test conducted using Wilcoxon Smith test because the data were not normally distributed and it was tested in pairs. The result after comparative test between pre test and post test in treatment and placebo group confirmed that there was not a significant difference.

Table 3. Wilcoxon Smith Test (The Pre Test-Post Test of Treatment and Placebo Group)

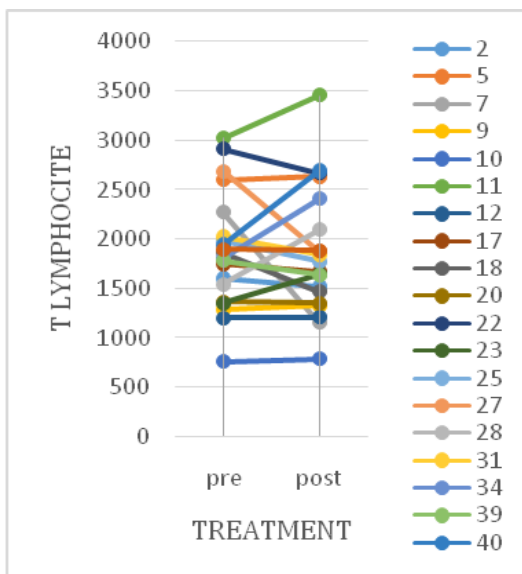
Groups		n	*p*
Treatment	Pre Test	20	*0.370*
	Post Test	20	
Placebo	Pre Test	20	*0.794*
	Post Test	20	

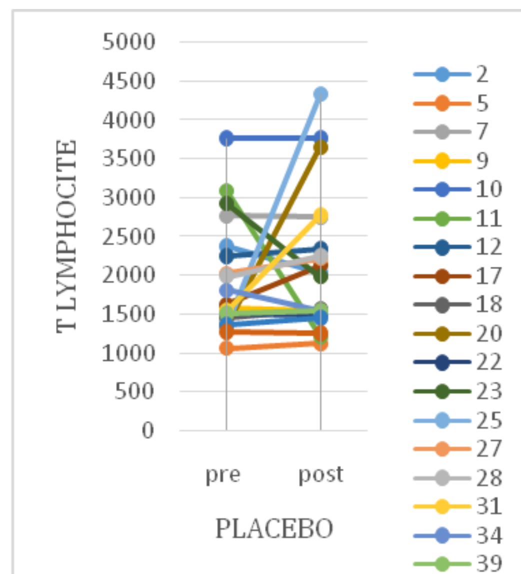
After comparative test using Wilcoxon Smith in pre test and post test examination was done, the researcher did comparative test using Mann-Whitney to identify the difference between treatment and placebo group as shown in Table 4.

Table 04. Different Mann-Whitney test (Treatment group and placebo)

Groups		n	*p*
Pretest	Treatment	20	*0.478*
	Placebo	20	
Posttest	Treatment	20	*0.102*
	Placebo	20	

It was also necessary to describe the partial distribution of the data from each sample in the following graph. Graph 1 showed that the total lymphocytes count variation changed in each sample. As a result, the fluctuations of each individual in both group changed. It happened because the sample or individual had different multifactor, so the effect of total lymphocytes changing was different from each other.





Graph 1. The total of Lymphocytes Individual Graph in Treatment and Placebo Group

DISCUSSION

The process of HIV infection is T lymphocytes express CD4 as a surface marker and immune regulation system. CD4 monitoring is commonly done in clinical because it will help to begin giving the ARV and or change different types of antiretroviral

drugs for patients with HIV. Consuming the ARV correctly will help patients to improve their health status. Moreover, health status will be monitored by immune cells indicators and it will be checked routinely. Delaying on consuming ARV can cause decreasing of CD4 lymphocyte number and it may increase the risk of opportunistic infection (Kaufmann et al. 2003). Besides ARV therapy, the subjects from this study were given mangosteen peel extract as an antioxidant and the researcher hoped that mangosteen peel extract could be as an adjuvant therapy jointly with the provision of antiretroviral drugs. After being given to HIV patients for 30 days, the total lymphocyte examination of pre-test and post-test was not significantly different in the treatment group, by non-parametric Wilcoxon Smith test: p = 0370 (p> 0.05).

In addition, there was no significant difference in the post-test examination after 30 days consumed mangosteen peel extract between two groups: the treatment and placebo group. This result was shown in Mann-Whitney analysis Table: p= 0478 (p>0.05). Thus, in this case the mangosteen peel extract was not effective against the total lymphocytes in HIV patients with antiretroviral therapy. The antioxidant in body should be able to contribute or protect against TNF cytokine. This ineffectiveness was possible due to the increasing of free radical production that occurs in people with HIV (Jaruga et al. 2002). The production of free radical increases in HIV patients because phagocytosis process that is done by phagocytic cells and TNF was mediated by target cell. Then, when free radical induced TNF toxicity, it could increase HIV viral replication and destroy CD4 T cells (Kameoka et al. 1993). Unbalancing redox happens because superfluous amount of pro-oxidants or antioxidant reduction that affect normal physiological (Kameoka et al. 1993).

In previous study, there was a positive correlation between total lymphocytes with T CD4 cells in HIV patients: r= 0.68 (Swity, 2013).However, in this study, there was no positive association for the results of CD4 T cells increased significantly: p = 0.001 (p <0.005). The result of this study showed that many factors could affect the total of lymphocytes count and complete blood test was needed to know the factor that affect of lymphocytes cell. In this study, the subject sampling was human where we know that people have a lot of factor that affect the total of lymphocytes. Although the subject of this study had equal basic characteristic or same starting point based on the statics, but many factors such as daily meal that they consumed, the different daily activities from the research subject were different, the difference of environment, RNA. These factors will have an effect on the general state of the patient. In contrast, if this study was conducted in confounding experimental animals, the factors can be controlled and minimized. As a result, further research is needed with intensity control in general so there are fewer factors that influence the assessment results of research variables. The result of this study could be much better with longer period of treatment and also more research subjects, as well as to minimize other factors that affect the total of lymphocytes.

From HIV form that was provided the researchers also got subjective responses from respondents. Some positive responses that the respondents felt were their appetite increased and they also felt their body healthier. Motivation, support, and attention from others about their feelings and actions can be considered to next study.

CONCLUSION

Mangosteen peel extract (Garciana mangostana) is not effective against the total lymphocyte count in HIV patient group treated with ARV therapy.

Further research is needed to learn about the development of mangosteen peel extract (Garcinia mangostana) and it is important to study about all of immune cells that contribute to HIV replication, like cytokines, immunoglobulin, CD4 and etc.

REFERENCES

Chen, S.-X., Wan, M. & Loh, B.-N., 1996. Active Constituents Against HIV-1 Protease from *Garcinia mangostana*. *Planta Medica*, 62(4), pp.381–382. Available at: http://www.ncbi.nlm.nih.gov/pubmed/8792678 [Accessed May 2, 2017].

Ghate, M. et al., 2011. Mortality in HIV infected individuals in Pune, India. *The*

Indian journal of medical research, 133(4), pp.414–20. Available at: http://www.ncbi.nlm.nih.gov/pubmed/21537095 [Accessed May 2, 2017].

Jaruga, P. et al., 2002. Supplementation with antioxidant vitamins prevents oxidative modification of DNA in lymphocytes of HIV-infected patients. *Free radical biology & medicine*, 32(5), pp.414–20. Available at: http://www.ncbi.nlm.nih.gov/pubmed/11864781 [Accessed May 2, 2017].

Kameoka, M., Kimura, T. & Ikuta, K., 1993. Superoxide enhances the spread of HIV-1 infection by cell-to-cell transmission. *FEBS Letters*, 331(1–2), pp.182–186. Available at: http://doi.wiley.com/10.1016/0014-5793%2893%2980322-L [Accessed May 2, 2017].

Kaufmann, G.R. et al., 2003. CD4 T-Lymphocyte Recovery in Individuals With Advanced HIV-1 Infection Receiving Potent Antiretroviral Therapy for 4 Years<subtitle>The Swiss HIV Cohort Study</subtitle> *Archives of Internal Medicine*, 163(18), p.2187. Available at: http://www.ncbi.nlm.nih.gov/pubmed/14557216 [Accessed May 2, 2017].

Nakatani, K. et al., 2002. Inhibitions of histamine release and prostaglandin E2 synthesis by mangosteen, a Thai medicinal plant. *Biological & pharmaceutical bulletin*, 25(9), pp.1137–41. Available at: http://www.ncbi.nlm.nih.gov/pubmed/12230104 [Accessed May 2, 2017].

Swity, A.F., Setiabudi, D. & Garna, H., 2016. Korelasi Total Lymphocyte Count terhadap CD4 pada anak dengan Infeksi Human Immunodeficiency Virus. *Sari Pediatri*, 15(2), p.81. Available at: https://saripediatri.org/index.php/sari-pediatri/article/view/275 [Accessed May 2, 2017].

NURSE BEHAVIOR IN IMPLEMENTATION OF DIABETES MELLITUS EDUCATION BASED ON THEORY OF PLANNED BEHAVIOR

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ABSTRACT

Introduction: Education is the important component in self-management of Diabetes mellitus patients. Nurse as one of the health care provider should take an active role in giving adequate education. The aim of this study was to analyze factors influencing nurse's behavior in implementation of Diabetes mellitus education based on the theory of planned behavior. **Method:** This study used cross-sectional design. Population in this study were all nurses in the medicinal public hall whose were assigned to give education toward patients in 62 public health center in Surabaya city in 2016. Sampling technique used total sampling and 112 nurses obtained as samples. Variables in this study consist of attitude, subjective norm, perceived behavioral control (PBC), intention and practice in DM education. Data collection was using questionnaire and observation sheet and also analyzed using Spearman rho with α 0,05. **Result**: Statistical analysis result shows there is a significant relationship between attitudes, subjective norm, perceived behavioral control (PBC) toward intention with p-value of 0,022; 0,048; and 0,000 respectively and there is no significant relationship between intention and practice of Diabetes mellitus education with p-value 0,194. Nurse's attitudes, subjective norm, perceived behavioral control (PBC) had a positive effect toward intention of Diabetes mellitus education, but intention had no effect toward practice of Diabetes mellitus education in public health center. **Conclusion**: Theory of Planned Behavior (TPB) stated that individual behavior occurred because of intention that could be affected by attitude, subjective norm, and perceived behavioral control (PBC). The future study was expected to use a qualitative approach and related study regarding development of education media in public health center.

Keywords: Education, nurse, Diabetes mellitus, Theory of Planned Behavior

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INTRODUCTION

Diabetes mellitus commonly referred to DM type 1 and DM type 2, is a chronic metabolic disease which requires complex patient involvement in management (Powers et al. 2015). Self-care for DM sufferer plays an important role in preventing and reducing complications, morbidity, and mortality of patients (Rahim-Williams 2011). One of the core components to improve the self-care of Diabetes mellitus is education (Formosa et al. 2012). Education is a basic tool which is crucial to maintain the metabolic control in DM effective care (Irons et al. 2007). Inadequate patient education is the most influential factor to the lack of knowledge and skills of self-care management of patients (Golchin 2008), which the former has an impact on the increased risk of complications and disruption of the economic aspects (Parvaneh & Abazari 2012).

Surabaya, which is divided into five regions, has 62 community health centers (Public health center) with high number of diabetes sufferers visiting Public health center, based on the report of Health Department of Surabaya. The report shows those number in 2012, 2013 and 2014 as many as 21606, 16069 and 13513 people respectively. It indicates the rate of visitor for getting DM treatment declined sharply from 2012 to 2014. However, Surabaya is still at the top of the city with the highest DM case in East Java which reached twelve thousand cases per year, followed by Bangkalan, Malang, And Lamongan (Pranoto 2015).

In Indonesia, Education modules has been developed for public and people with diabetes by Health Department of Surabaya and PERKENI in which the former contains the guidelines to educate DM. Socialization for PERKENI consensus book has been done, but the implementation of these recommendations is 2-45% only. Based on reports from the International Diabetes Management Practice Study (IDMPS), there is only 36.1% of DM sufferer who obtained the education (Soewondo 2011). Nurses in primary care settings only organize diabetes education in general with the unstructured format in a short time even this is conducted with a variety of other chronic diseases (Onuoha & Ezenwaka 2014).

Based on preliminary studies conducted by researchers at one of Public health center in Surabaya through observation, DM education implemented in Public health center only gave suggestion to restrict eating, take medication

regularly, and control every month to check up. Moreover, educational materials given was same for all patients. Not only the same method for all sufferer but also educational process did not use any media so that there was no simulation. The sufferer’s family also was not involved in that method. The nurse did not assess an evaluation of the education provided and did not observe the patient's ability to perform self-care. It represents that the nurses at Public health center have not provided education in accordance with the standards set in Indonesia referring to the Health Ministry and PERKENI.

There are causes of implementing education according to standards, such as the lack of preparation and plan of the organization or health service, interpersonal relationship is not effective, and lack of training program on DM (Santos & Torres 2012), lack of knowledge about guidelines for education (Odili & Eke 2010; Jansink et al. 2010; Santos & Torres 2012), the educational ability of nurses (Jansink et al. 2010), and limited of time, so many activities have short visit. Facility for the implementation of education is also an obstacle of DM education.

Nurses as part of health workers are also required to have a general requirement to provide care and diabetes education, namely knowledge, attitudes, and skills (Rodrigues et al. 2009). Nurse has a key role with primary health care for type 2 in which nurses should help patients to understand the process disease during attack and possible complications so they can teach patients to be able to apply self-care (Macdonalds et al. 2013), so it is necessary to do research related to the behavior of nurses in the application of DM education.

The theory that can be used in analyzing the behavior of nurses is the Theory of Planned Behavior. Theory of Planned Behavior (TPB). This theory has been proved to significantly predict the intention and improvement of behavior (Wahyuni 2012), applying hand hygiene (White et al. 2015), observing the behavior of nurses related to patient safety (Jayadi et al. 2013), treatment for SARS patients (Ko et al. 2004) and also doing counseling and prescription of emergency contraception (Hauselt 2007). Nevertheless, these studies have not explained the behavior of the nurses in application of DM education.

Several researches are also conducted by some nurses for inpatient which they have not applied yet. The study, focused on nurses in primary care or Public health center related to the behavior for application of education DM, needs to be done considering the important role of nurses as health care providers and 90% of type 2 provided by the Public health center (Widyahening & Soewondo 2012; Barbara & Bruce 2015). So, that can be relied upon in making the concept of the solution to address the needs of nurses in primary care or Public health center in order to implement diabetes education effectively and properly

METHODS

This research used observational analytical research with cross sectional approach. The population was all nurses at Public health center around Surabaya to provide education for patients in 62 Public health center in 2016. The sample of this research were all nurses at public health center to provide education for patients in 2016. The total amount of those populations and samples were 112 nurses. The sampling technique was total sampling. The independent variable were attitudes, subjective norms, and perceived behavioral controls. The dependent variables were the nurse's intentions and practice in the implementation of Diabetes mellitus education.

Attitude, subjective norm, perceived behavioral control (PBC), and the intention are measured by using a questionnaire while the practice of DM education is measured by using observation sheet when DM education applied by nurses. The questionnaire for data collection has been tested for validity and reliability and has been declared valid and reliable.

According to the public health center head, an educator role is the responsibility of the nurse in charge of the assessment and anamnesis of patients, so the researchers decided to make the nurse in charge of conducting studies and histories as respondent. Filling out the questionnaire is made after researchers conducted observations. The collected data is processed and analyzed. Normality test results indicates that the attitudes, subjective norms, and perceived behavioral control (PBC) normally distribute while intention and practice of distribution are abnormal thus bivariate analysis has been used by using Spearman correlation test with α 0.05.

RESULTS

The results of the study includes background factors, attitudes, subjective norms, perceived behavioral control (PBC), the intentions and nurses actions in implementing education Diabetes mellitus, the influence of main factors (attitudes, subjective norms, perceived behavioral control) to the intention and its effects to the nurse action or practice of applying education.

Table 1 illustrates the personal information and background of respondents which are divided to ages, gender, education, work experience, respondent's salary, religion, tribe, and Knowledge about DM.

Table 1. Personal information and background the study of Nurse Behavior in Implementation of Diabetes Mellitus Education Based on Theory of Planned Behavior in Public health center around Surabaya in 2016

Respondent characteristic	n	%
Age		
21-30 year-old	26	23,2
31-40 year-old	42	37,5
41-50 year-old	34	30,4
>50 year-old	10	8,9
Gender		
Male	36	32,1
Female	76	67,9
Education		
Sekolah Perawat Kesehatan	4	3,6
Diploma of Nursing	76	67,8
Bachelor of Nursing	32	28,6
Work Experience		
<1 year	1	0,9
1-5 year	28	25
6-10 year	50	44,6
>10 year	33	29,5
Salary		
1.000.000-2.999.900	11	9,8
3.000.000-4.999.900	66	58,9
>5.000.000	35	31,3
Religion		
Islam	100	89,2
Katholik	3	2,7
Kristen Protestan	7	6,3
Hindu	2	1,8
Tribe		
Jawa	102	91,1
Madura	7	6,2
Lain-lain	3	2,7
Knowledge		
Baik	91	81,3
Cukup	20	17,8
Kurang	1	0,8

The most participating category of respondents are 31-40 year-old for age, female for gender, diploma of nursing for education, 6-10 years for work experience, 3-5 million rupiahs for salary, moslem for religion, Javanese for tribe, and good understanding of knowledge about DM.

Most of the respondent's attitudes during implementation of educational have majority in positive category with a percentage of 55.4%, subjective norms in moderate category with a percentage of 74.1%, Perceived behavioral control (PBC) in moderate category that is equal to 97.3% and the majority of respondents (52.7%) have good intentions. Most respondents (96.4%) included in the category are less action in DM education.

Statistical analysis using Spearman correlation with p value=0.048 (<0.05) means there is a significant relationship between subjective norms and intention in the implementation of Diabetes mellitus education. Spearman correlation at 0.187 states that direction is a positive correlation with weak correlation. Perceived behavioral control (PBC) and intention in the implementation of Diabetes mellitus education also had a significant correlation (p-value = 0.000). Spearman correlation at 0.558 indicates the positive correlation direction with moderate correlation. However, there was no relationship between the intention with practice in the implementation of Diabetes mellitus education (p value=0.194).

Table 2. Cross Tabulation between attitude and intention In Implementation of Diabetes Mellitus Education Based on Theory of Planned Behavior in Public health center around Surabaya in 2016

Attitude	Intention				Total	
	Good		Less			
	n	%	n	%	n	%
Positive	35	56,5	27	43,5	62	100
Negative	24	48	26	52	50	100
Total	59	52,7	53	47,3	112	100
Spearman correlation coefficient r_s=0,216 (p=0,022)						

Table 3. Cross Tabulation between subjective norm and intention In Implementation of Diabetes Mellitus Education Based on Theory of Planned Behavior in Public health center around Surabaya in 2016

Subjective Norm	Intention				Total	
	Good		Less			
	n	%	n	%	n	%
Good	11	64,7	6	35,3	17	100
Moderate	44	53	39	47	83	100
Less	4	33,3	8	66,7	12	100
Total	59	52,7	53	47,3	112	100
Spearman correlation coefficient r_s =0,187 (p=0,048)						

Table 4. Cross Tabulation between perceived behavioral control (PBC) and intention In Implementation of Diabetes Mellitus Education Based on Theory of Planned Behavior in Public health center around Surabaya in 2016

Perceived Behavioral Control	Intention				Total	
	Good		Less			
	n	%	n	%	n	%
Good	1	100	0	0	1	100
Moderate	58	53,2	51	46,8	109	100
Less	0	0	2	100	2	100
Total	59	52,7	53	47,3	112	100
Spearman correlation coefficient r_s =0,558 (p=0,000)						

Table 5. Cross Tabulation between intention and practice In Implementation of Diabetes Mellitus Education Based on Theory of Planned Behavior in Public health center around Surabaya in 2016

Intention	Practice				Total	
	Good		Less			
	n	%	n	%	n	%
Good	3	5,1	56	94,9	59	100
Less	1	1,9	52	98,1	53	100
Total	4	3,6	108	96,4	112	100
Spearman correlation p=0,194						

DISCUSSION

Statistical analysis showed a significant relationship between attitude and intention which means that the attitude of nurses about DM education affects their intention in implementing DM education. These results are consistent with research conducted by Kortteisto et al. (2010) which states that the attitude is an important factor associated with the intention of health workers for using clinical practice reference. Good intention tends to be influenced by the positive attitude of nurses. Ko et al. (2004) also proved that a positive attitude contributes significantly in predicting the intention of nurses to perform maintenance on SARS patients. This is in accordance with the Theory of Planned Behavior stating that attitudes toward the behavior are a determining factor for the formation of intentions (Ajzen 2005).

Attitude can affect a person intention to perform a behavior. An individual will intend to behave in certain ways when he/she vote positively. The attitude of nurses in the educational application of DM influenced by belief or conviction that a good and corresponding recommendation education DM will result in a good outcome for the patient. Nurses also believe that DM education will be able to help the patients to perform self-care management well.

Good intention tends to be influenced by a positive attitude, but there are respondents who have a positive attitude have less intention, and also respondents who have a negative attitude have good intentions. This could be caused by subjective norms and perceived behavioral control, and every individual. They have its perception of factors which is affecting their intentions. In some situations, one or two factors can be used to explain the intention, and most of these three factors play a role in explaining the intention. In addition, every individual has consideration to decide what the most influential individuals in behavior is (Ajzen 2005).

The statistical test result shows a significant relationship between subjective norms and intention. Intention nurse education in the application of DM is influenced by subjective norms (related parties) in implementing DM education at Public health center. These results are consistent with research conducted Kortteisto et. al. (2010) which states that the subjective norm is an important factor associated with health worker’s intention to use clinical practice reference.

The results showed that most respondents had medium subjective norms for implementation of Diabetes mellitus education at Public health center. This may be caused by reference or party getting involved on individuals. The nurses would assume that the related parties did not show their hope to educate well and did not motivate nurses to educate as well as recommendations so that the nurses did not believe that other people or reference would approve or support their actions in implementing the education according to recommendations. Nurses did not have a subjective norm that put pressure on themselves to educate DM. For example, there was no written regulations in detail and binding set the nurse’s responsibility of educating DM according to the recommendations, none of the patients or families who asked for education, no demands, motivation, and recognition from colleagues and other health professionals.

Good intention tends to be influenced by good subjective norms, but there are respondents who have a good subjective norms

while they have less intention. This could be caused by the attitudes and perceived behavioral control. In addition, lack of motivation, demands, monitoring, and evaluation from third-parties, such as the Health Department Surabaya, Public health center head, colleagues, or even other health professionals, make nurses think that the related parties do not want them to apply DM education as recommendation and not a problem for nurses if they do not apply DM education. Therefore the nurses do not intend to educate DM based on recommendation.

Statistical analysis showed a significant relationship between perceived behavioral control (PBC) to the intention, which means the perceived behavioral control (PBC) affects to the intention of nurses in implementing Diabetes mellitus education at Public health center. The results are consistent with research conducted (Wahyuni 2012) which states there is significant influence between the PBC and intention of nurses behavior. This indicates that the better PBC on individual, the better his or her intention because PBC has a motivational effect to the intention.

The results showed that most respondents have perceived behavioral control (PBC) in medium category of Diabetes mellitus education at Public health center. Perceived behavioral control tends to produce good intentions.

Some respondents had a good PBC but their intention is less or more. According to (Azwar 2010) that in some situations, PBC is not realistic, as the condition when people faced the available resources changing or when a new element appears in that situation. Such conditions is clearly seen there are internship students of nursing at public health center that have certain competencies demands including anamnesis and educate the patient so that the nurses have to adjust the current conditions as supervising students and not directly involved in nursing care to patients. This is predicted when the PBC is not directly proportional with the intention possessed.

Statistical analysis showed that there is no significant relationship between intentions and actions in the implementation of Diabetes mellitus education, which means intention does not affect the actions of nurses. This research relates to another research Kortteisto (2010) which states that primary care has a negative effect on the variable intention characterized by low rate of primary care health workers to run standard operational procedure rather than hospital health workers.

The results of studies pointed out that there is no relationship between intentions and actions in implementing Diabetes mellitus education. This relates to Ajzen opinion (2005) that the accuracy intention in predicting the behavior is not certainly unconditional since it was found in some studies that intentions do not always produce that behavior. According to Ajzen (2005), although many experts who have shown a strong relationship between intention and behavior, the study sometime also found a weak correlation between both of them.

Azwar (2010) stated that according to the theory of planned behavior, among the various beliefs, the availability of opportunities and resources are the reason to determine intention and attitude. This belief can be derived from the experience, and also it can be influenced by indirect information about the behavior, for example by looking at the experience of a friend or someone else, it is also be influenced by several other factors that reduce or increase the effect the difficulty committing acts.

CONCLUSION

A positive attitude of nurses for implementation of diabetes mellitus education will lead good intentions in implementation of diabetes mellitus education. A good subjective norm will lead intentions in implementation of diabetes mellitus education. A good perceived behavioral control will lead to good intentions in the implementation of diabetes mellitus education. Intention has no effect on the action of diabetes mellitus education implementation at public health center.

It needs an association's standing for diabetes sufferer from every area or Public health center in order to facilitate nurses to accommodate the DM education program and also activities based on patient empowerment and community to help the role of health professionals in diabetes management.

Need to do research with a qualitative approach to understand and obtain the information deeper about the weakness pf implementing DM education. It needs to do research related to the development of media education at Public health center.

REFERENCES

Ajzen, I., 2005. *Attitudes, personality, and behavior* 2nd ed., Berkshire: Open University Press.

Azwar, S., 2010. *Sikap manusia teori dan pengukurannya* 2nd ed., Yogyakarta: Pustaka Pelajar offset.

Barbara, D. & Bruce, A., 2015. Management of diabetes by primary health care nurses in Auckland, New Zealand. *JPrim Health Care*, 7(1), pp.42–50.

Formosa, C., Gatt, A. & Chockalingam, N., 2012. The importance of diabetes foot care education in primary care setting. *Journal of Diabetes Nursing*, 16(10), pp.410–414.

Golchin, M., 2008. Knowledge and practice on insulin self-injection procedure in diabetic patients at Qozvin diabetes unit. *The journal of Qazvin Univ. of Med. Sci*, 12(1), pp.8–11.

Hauselt, M., 2007. *An application of the theory of planned behaviour on nurse mid wives' intentions to counsel and prescribe emergency contraception*. University of Colorado.

Irons, B. et al., 2007. The need for a community diabetes education curriculum for healthcare professionals. *Journal of continuing education in nursing*, 38(5), pp.227–231. Available at: http://www.ncbi.nlm.nih.gov/pubmed/17907667.

Jansink, R. et al., 2010. Primary care nurses struggle with lifestyle counseling in diabetes care: a qualitative analysis. *BMC family practice*, 11(1), p.41. Available at: http://www.biomedcentral.com/1471-2296/11/41.

Jayadi, M. et al., 2013. Applying theory of planned behavior in predicting of patient safety behaviors of nurses. *Materia socio-medica*, 25(1), pp.52–58. Available at: http://www.pubmedcentral.nih.gov.

Ko, N. et al., 2004. Applying theory of planned behavior to predict nurses intention and volunteering to care for SARS patients in southern Taiwan. *The Kaohsiung journal of medical sciences*, 20(8), pp.389–398. Available at: http://www.kjms-online.com.

Kortteisto, T., Kaila, M. & Komulainen, J., 2010. Healthcare professionals' intentions to use clinical guidelines: A survey using the theory of planned behaviour. *Implementation Science*, 5(51).

Macdonalds, L. et al., 2013. Nurse-patient communication in primary care diabetes management: an exploratory study. *BMC nursing*, 12(1), p.20.

Odili, V. & Eke, I., 2010. Knowledge of diabetes mellitus among registered nurses in Benin City. *International Journal of Health Research*, 3(3), pp.145–151.

Onuoha, P. & Ezenwaka, C., 2014. Diabetes patient need support to practise self-monitoring of blood glucose levels. *Asian journal od sciense and technology*, 5(12), pp.789–792. Available at: http://www.journalajst.com.

Parvaneh & Abazari, Z., 2012. Inadequate investment on management of diabetes education. *Res med*, 17(8), pp.792–798.

Powers, M. et al., 2015. Diabetes Self-management Education and Support in Type 2 Diabetes: A Joint Position Statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics. *Diabetes Care*, 38(13), pp.1–9. Available at: http://care.diabetesjournals.org.

Pranoto, A., 2015. Surabaya peringkat tertinggi diabetes. *Harian Bhirawa*, p.3. Available at: https://issuu.com/harianbhirawacetak.

Rahim-Williams, 2011. Beliefs, behaviors, and modifications of type 2 diabetes self-management among African American women. *Journal of the National Medical Association*, 103(3), pp.203–215.

Rodrigues, F. et al., 2009. Knowledge and attitude: important components in diabetes education. *Revista latino-americana de enfermagem*, 17(4), pp.468–473.

Santos, L. & Torres, H., 2012. Educational practices in diabetes mellitus: understanding the skills of health professionals. *Florianopolis*, 21(8), pp.574–580.

Soewondo, P., 2011. Current practice in the management of type 2 diabetes in indonesia: results from the international diabetes management practices study (IDMPS). *Journal of Indonesians Medical Association*, 61(12), pp.474–81.

Wahyuni, E.D., 2012. *Pengembangan perilaku*

perawat dalam pendokumentasian asuhan keperawatan berbasis theory of planned behavior. Universitas Airlangga.

White, K. et al., 2015. Using a theory of planned behaviour framework to explore hand hygiene beliefs at the "5 critical moments" among Australian hospital-based nurses. *BMC health services research*, 15(1), p.59.

Widyahening, I. & Soewondo, P., 2012. Capacity for management of type 2 diabetes mellitus (T2 DM) in primary health centers in indonesia. *J Indon Med Assoc*, 62(11), pp.439–443.

CONSUMPTION OF FRUIT AND VEGETABLE WITH RISK OF OBESITY IN SCHOOL-AGE CHILDREN

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ABSTRACT

Introduction: The problem of obesity in children aged 5-12 years in Indonesia is still high, East Java is one of the provinces that have higher prevalence of obesity than the national average (Riskesdas 2013). Consumption of fruit and vegetables affects the level of obesity's risk, but nowadays fruit and vegetable consumption in school-age children are low. This study was aimed to determine the correlation between consumption patterns of fruits and vegetables with the risk of obesity in school-age children in Ketabang I Surabaya elementary school. **Method:** This research uses the descriptive correlation method with cross sectional approach. The population of this research is students in grade 4 and 5. Purposive sampling technique used to select 69 respondents as samples. The independent variable in this study is the consumption pattern of fruit and vegetable, while the dependent variable is the risk of obesity. The data were analyzed with chi-square test. **Result:** The results of this research showed that most of respondents consume less fruit and vegetable (52%). The number of respondents who are obese is 20%, while the number of respondents who have high risk is 13%. Statistical analysis showed that the consumption pattern of fruits and vegetables has a correlation with the risk of obesity (p = 0.009). **Discussion:** There was a significant relationship between the consumption patterns of fruit and vegetables with risk of obesity in school-age children in Ketabang I Surabaya elementary school. Further studies should examine the appropriate interventions to overcome the problem of obesity in school-age children.

Keywords: consumption pattern of fruit and vegetables, risk of obesity, school-age children.

INTRODUCTION

Obesity in children is a serious medical problem that affects children in the developed and developing countries because obesity potentially cause comorbidities and increased the risk of some chronic diseases (Vash, 2015). The prevalence of overweight and obesity in children and adult increased at the end of the 20th century spread evenly in all over the countries in the world (Bray & Bouchard, 2014). Nowadays, children tended to prefer fast food with the reason that it feels good, and a tendency consumption of fruit and vegetable is low that can cause fatness on child, whereas on the childhood period is really important to consume fruits and vegetables because it can help the children to apply a healthy food consumption pattern to controls and organizes weight (Dewi 2013). Fruits and vegetables can minimize the risks of obesity in children, because fruits and vegetables can burn fat without makes many calories (CDC 2011).

In Indonesia, problems of fatness in school age children (5 to 12 years) are still high (18.8%), consisting of overweight 10.8% and obese 8.8%. East Nusa Tenggara have the lowest prevalence of overweight (8.7%) and the highest prevalence is in Jakarta (30,1%). There are 15 provinces with prevalence of obesity that above the national average, that provinces are Central Kalimantan, East Java, Banten, East Kalimantan, Bali, West Kalimantan, North Sumatra, Riau, Jambi, Papua, Bengkulu, Bangka Belitung, Lampung and Jakarta (Riskesdas, 2013). Research by nutrition institutions survey and National Health about prevalence of obesity in 2008 to the children in primary schools and play group in ten cities in Indonesia consecutively from the highest are Jakarta (25%), Semarang (24,3%), Medan (17.75%), Denpasar (15.7%), Surabaya (13.4%), Palembang (12.2%), Padang (7.1%), Manado (5.3%), Yogyakarta (4%) and Solo (2.1%). Mean prevalence of overweight in ten cities has reached 12.7% (Wahyu, 2009).

Obesity can cause the various diseases, such as heart disease, hypertension, diabetes type 2, metabolic syndrome, hipercolesterol, asthma, sleep disorder, orthopedic complication, and mental disorder (Paxon, 2010). Obesity also has adverse indirect effects to the decline in cognitive function most likely due to the impact of illnesses that suffered by the obese children (diabetes, obstructive sleep apnea syndrome (OSAS), problems of respiration), problem related to psychosocial (inferiority, self isolation, and depression) and also social maturity (Wendt, 2009).

Researcher did a survey to 586 students in SDN Ketabang I Surabaya and obtained the results of 3.75 % high risk to obesity and 14.6 % are obese. The results of the interviews from 20 students known that 25% did not like to eat vegetable, 5% did not like to eat fruit, and 5 % did not like to eat fruits and vegetables. Among 25 % of children that does not like ate vegetables, two children are having nutritional status of belonging to the obesity, whereas 18 students who have been were interviewed has low risk category. The reason of the students who was not like to eat fruit or a vegetable is because it has bad taste.

Based on that background, the purpose of this study is to investigate the correlation between consumption pattern of fruits and vegetables with the risk of obesity in school-age children in Ketabang I Surabaya elementary school.

METHOD

This research using descriptive correlational design with cross sectional approach, where the data was taken in the same time. This method chosen to define the relationship between consumption patterns of fruits and vegetables with risk of obesity in school age children.

This study was conducted in Ketabang I Surabaya elementary school. The affordable population on this research are the students from 4th and 5th grade in Ketabang I Surabaya elementary school as much as 218 students. The students from 4th and 5th grade were chosen to be samples because the obesity prevalence from that grade is the highest among al of the grades in Ketabang I Surabaya elementary school. The number of respondents that needed as samples for the research is 75 respondents. The number of the respondents were taken from the classroom with the highest prevalence of risk to obesity and obesity among 4th and 5th grade in Ketabang I Surabaya elementary school. Students who selected to be sample are 29 students from 4b class, 8 students from 4a class, and 38 students from 5b class.

Sampling techniques that used in this research is purposive sampling. To minimize the bias, the inclusion criterias were: 1) 4th and 5th grade of Ketabang I Surabaya elementary school. 2) Students that able to understand and answer the written questions. 3) Students who has been approved by their parents / teachers to be respondents in this study. The exclusion criterias are: 1) students who have allergic to particular fruit and vegetables. 2) students who is sick while the data being collected

The independent variable in this research is consumption patterns of fruits and vegetables, while the dependent variable in this research was risk of obesity that known from the BMI (Body Mass Index) according to age. The instrument that used in this research is semiquantitative food frequency questionnaire that adapted and modified from NHANES (2005-2006), the eating pattern questionnaire used to obtain data relating consumption patterns fruits and vegetables qualitatively, adapted and modified from Eating Pattern Questionnaire Prochildren (2003) for measuring consumption patterns of fruits and vegetables over a week, and WHO Anthroplus to know the BMI of the children according to age.

Primary data that gathered through questionnaire such as identity, attitude and consumption of fruits and vegetables. The data about consumption frequency of fruits and vegetables obtained through Food Frequency Questionnaire. The data about nutritional status were known through measurement of the height and weight, and calculation of body mass index according to age. Secondary data that needed were description of the school like the number of the students, the names of students, class, sex, and school overview that obtained from the administration staff in Ketabang I Surabaya elementary school.

Data collection was done by conducting anthropometry measurement, structured interview using food frequency questionnaire, and deploy eating pattern questionnaire to the students. This activity was conducted alternately from one class to another class. The researcher explain about the research to the prospective respondents, provides informed consent to the teacher of the respondents. The teacher considered to be agree that the student become the respondents of this research after signed the informed consent. After filling the informed consent, researcher doing the measurement of height and weight, body mass index according to age calculated by using application WHO Anthroplus. After that researchers conducted interviews on child to know the frequency and the amount of consumption of fruits and vegetables by using

semiquantitative food frequency questionnaire. The interviews were conducted alternately on every respondents. At the time of interview researchers used simple daily conversation so easy to understand by the respondents. The time that needed to interview every student is about 5-10 minutes.

Next, researchers share a questionnaire that contained about risk of obesity analysis on children and consumption patterns of fruits and vegetables, respondents were accompanied by the researchers while filling the questionnaire. The data that obtained from the answer of the questionnaire during was put into tabulation then analyzed use Chi Square statistical tests. After the data collected processed, so the next stage is to do the interpretation of the results.

RESULT

At Ketabang I Surabaya elementary school there is a canteen that sells foods for the students, but the kind of food that sold there contain high calories. In front of the schools gate there are also many food retailer, kind of food that sold also contain high calories and unhygienic. This situation makes the students had no choice to buy a healthy and nourishing food at school because of the lack of availability of nutritious food at school, eventhough school-age children need a balanced nutrition to support optimal development and growth.

Table 1. Distribution of demographic characteristic of the respondents

No.	Demographic Data	Category	f	%
1	Sex	Male	33	48%
		Female	36	52%
	Total		69	100%
2	Age	10 years	17	25%
		11 years	31	45%
		12 years	21	30%
	Total		69	100%

The number of respondents based on sex are 33 male students (48 %) and 36 female students (52 %). Respondents in this research is aged 10-12 years, and the respondents who was 11 years old has the most frequency, 31 students (45%).

Table 2. Distribution of the respondents based on fruits and vegetables consumption

No.	Consumption of fruits and vegetables	f	%
1	Less	36	52%
2	Good	33	48%
	Total	69	100%

Consumption of fruits and vegetables are categorized as good if the number of fruits and vegetables consumed are ≥ 400 grams per day. Consumption of fruits and vegetables are categorized as less if the number of fruits and vegetables consumed are <400 grams per day (WHO 2007). The consumption of fruits and vegetables was calculated by using semiquantitative food frequency questionnaire, from 69 respondents, there are 52% consumed less fruits and vegetables, and 48% have good consumption of fruit and vegetables.

Tabel 3. Distribution of the respondents based on risk of obesity

No	Risk of Obesity	f	%
1	Low risk	46	67%
2	High risk	9	13%
3	Obesity	14	20%
	Total	69	100%

Most of the respondents included in a low risk category (67%), followed by obesity (20%), and the lowest is high risk category (13%).

In table 4 can be seen that consumption of fruit and vegetable in the good category be greater among respondents who have low risk to obesity, namely 40.6 %. In the majority of respondents with high risk to obesity show consumption of fruits and vegetables is low, namely 10.1 %. Among the respondents who was obese consumption of fruits and vegetables that categorized as less as many as 15.9 %. The results of statistical tests shows the p value is 0.009, so it can be said that there was a meaningful relationship between consumption patterns of fruits and vegetables with the risk of obesity.

Tabel 4. Coreelation Fruits and Vegetables Consumption with Risk of Obesity using Chi Square test

Fruits & Vegetables Consumption	Risk of Obesity						P value
	Low risk		High risk		Obesity		
	f	%	f	%	f	%	
Less	18	26.1	7	10.1	11	15.9	0.009
Good	28	40.6	2	2.9	3	4.3	
Total	46	66.7	9	13	14	20.3	

DISCUSSION

The mean of daily fruits and vegetables consumption among students in Ketabang I Surabaya is enough to fulfill suggestion from the WHO namely ≥ 400 grams per day, but if considered from the individual consumption, the majority of respondents consumed less fruits and vegetables. Lack of fruits and vegetables consumption in children can be influenced by many factors, one of them is preference to fruits and vegetables. In this research, preference of fruits and vegetables means pleasure of the respondents towards fruits and vegetables. Respondents's preference of fruits and vegetables most affected by a taste. Negative preference of vegetable quite high compared with negative preference of fruit. The respondents that like all fruits and vegetables said that their parents provide fruits and vegetables everyday at home, while the respondents that does not like fruits and vegetables did not specify the reason why they do not love fruits and vegetable, they only reason that fruits and vegetables have a bad taste.

The research's results show that students in Ketabang I Surabaya elementary school mostly love fruit than vegetable. Researchers thought that taste and the availability of fruit at home impact on the consumption patterns of fruit and vegetable.This is corresponse with the results of the study conducted by Kronel (2011) that concludes that the main reason for the children and teenage dislike to consume fruits and vegetables is the taste, also the availability and access of fruits and vegetables at home affect consumption patterns of fruits and vegetables.

Table 3 shows that the respondents with the low risk has the highest frequency, followed by obesity, and the high risk has the lowest frequency. There were few respondents with high risk and obesity, nevertheless attention must be given to them because it can be bad for health. The impact that appear as the of effect obesity are heart disease, hypertension, diabetes type 2, metabolic syndrome, hipercolesterol, asthma, sleep disorder, orthopedic complication, and mental disorder (Paxon, 2010). The incidence of high risk to obesity in Ketabang I Surabaya elementary school has the potential to raise incidence obesity if it is not done by appropriate treatment and precautionary.

Data from the research results known that there is meaningful relations between consumption patterns of fruits and vegetables with the risk of obesity in school age children in Ketabang I Surabaya elementary school. This result is in accordance with the research of Sartika (2011) which indicates the presence of meaningful relations between consumption patterns of fruits and vegetables with risk of obesity on 5-15 years children in Indonesia. The same with the research of Nuraeni (2013) indicates that school age children who obese are rarely and consume less fruits and vegetables compared with the child who is not obesity in Yogyakarta and Bantul. Children that rarely and consume less fruits and vegetables can increase the risk of obesity.

Fruits and vegetables are the food that contain low density of energy that can manage an ideal weight. Fruits and vegetables are the source of various essential nutrient, as potassium, vitamin c, folic acid, fiber, and many phytochemical (CDC, 2008). Fruits and vegetables also content high amounts of fibers. Fibers play an important role in the process of digestion. Fibers fill the place in gaster and give satiety and decrease intraluminal pressure of the intestines. Soluble fibers can slow down the intestines absorption of fat and glucose (Mustofa, 2015). Water-soluble fibers as pectin and several hemiselulose having the ability to hold water and may form a viscous liquid in the gastrointestine tract, so that the high fibers foods having longer time to digest in the stomach. Then fibers will pull the water and give satiety longer so that can prevent to consuming more food. Food that contain higher raw fiber usually contain low calories, low sugar, and low fat that can help to reduce

the risk of obesity (Ichsan et al., 2015). This is in accordance with the results of the study of Santoso (2011) explained that water-soluble fibers can control weight or overweight (obesity).

The enhancement in public consumption of fruits and vegetables inversely proportional to the changes in weight, the results of substitution examination sensitivity analysis suggest to replace 5% calories over the other food to 5% calories over the fruit or vegetables (Bertola et al., 2015). Replacing high density foods ith low density food in the same amount can produce lower calories, while in the same amount of calories a person can consume more low density food compared with high density food (HSS, 2010). It can be concluded that by consume more fruits and vegetables, risks to be obese will be lower.

The research results that shown in table 4 can be known that the respondents who consume less fruits and vegetables mostly having low risk to obesity. Consumption patterns of fruits and vegetables are not the only cause of obesity in school-age children, but there are various factors that cause obesity. This is also expressed in the results of the study of Sartika (2011) who showed that risk factors of obesity in children aged 5-15 years in Indonesia are characteristic of the child, smoking habit and sports, consumption of fruits and vegetables habits, intake of energy and protein, and the history of obesity parents. According to the Ministry of Health (2012) the main cause of fatness and obesity is environmental factors of the imbalance between food consumption pattern, eating behavior, and physical activity. Bad eating pattern as consume large portions (more than need) , high-energy food, high fat , high carbohydrates , and low fiber is the main cause of the fatness and obesity. The research of Guo (2013) said that a short duration of sleep, passing breakfast, and parents who obese are the risk factors of obesity in school age children. Factors that related with the occurrence of obesity are consumption of high calories food that increased the risk to be overweight, consumption of sweet snacks, less physical activity, and spare time that often used to watch television and playing video games (Aballa, 2010). The research result of school age children in Bangladesh explained that the factors that related to obesity in school age children is the obesity history of the parents, less physical activities at home, and high sedentary activities (Zaman & Ahmed, 2013). Some factors that can cause obesity in school age children are biologic factors and genetic, physical factors include activity pattern and diet, environment factors including social, economy, culture, and physic (Solomon et al. , 2014).

CONCLUSION

The respondents in Ketabang I Surabaya elementary school partially consumed fruits and vegetables less than the recommendation from WHO, ≥400 gram per day. The majority of respondents in Ketabang I Surabaya elementary school has low risk towards obesity. Consumption pattern of fruits and vegetables related to the risk of obesity in school age children. Fruits and vegetables that contains fibers can help to maintain weight.

The school is expected to supply fruits and vegetables in school by selling foods and drinks in the canteen. The school also can held a program to eat fruits and vegetables at certain event to motivate the students on consuming fruits and vegetables. Parents can introduce various kind of fruits and vegetabless to children since young age. Parents should also provide fruits and vegetables at home everyday to support the increasement of fruits and vegetables consumption in children. Nurse can do routine examination to monitor nutrition status of the children trough health unit in school. The nurse are expected to give education towards the students and parents, and informed about the recommendation of fruits and vegetables consumption. Further studies should examine the appropriate interventions to overcome the problem of obesity in school-age children.

REFERENCES

Aballa, L.A., 2010. *Prevalence and Risks Factors for Obesity Among School Aged Children In Nairobi Province, Kenya*. Kenyatta University.

Bertola, M. et al., 2015. Changes in Intake of Fruits and Vegetables and Weight Change in United States Men and Women Followed for Up to 24 Years: Analysis from Three Prospective Cohort Studies. *Journal PLOS Medicine*.

Bray, G.A. & Bouchard, C., 2014. *Handbook of Obesity*, Boca Raton: CRC Press.

CDC, 2011. *Strategies to Prevent Obesity and Other Chronic Diseases*, Atlanta: Departement of Health and Human Service.

Dewi, Yessica, 2013. Studi deskriptif: Persepsi dan Perilaku Makan Buah dan Sayuran pada Anak Obesitas dan Orang Tua, Volume 2 Nomor 1 : *Calyptra*

Guo, X. et al., 2013. Prevalence and Risk Factors of Being Overweight or Obese among Children and Adolescents in Northeast China. *International Pediatric Research Foundation*, 74(4), pp.443–449.

HSS, 2010. Obesity Facts: Fruit and Vegetable Intake in Alaska. *Alaska Division of Public Health*.

Ichsan, B., Wibowo, B.H. & Sidiq, M.N., 2015. Penyuluhan Pentingnya Sayuran bagi Anak-Anak di TK Aisyiyah Kwadungan, Trowangsan, Malangjiwan, Colomandu, Karanganyar, Jawa Tengah. *Warta*, 18, pp.29–35.

Kemenkes, 2012. *Pencegahan dan Penanggulangan Kegemukan dan Obesitas pada Anak Sekolah*, Jakarta: Kementrian Kesehatan RI.

Kronel, R. et al., 2011. Determinants of Fruit and Vegetable Consumption among Children and Adolescents: A Review of Literature. Part II: Qualitative Study. *International Journal of Behavioral Nutrition and Physical Activity*, 8(112).

Mustofa, S., 2015. Manfaat Serat Bagi Kesehatan. *Biokimia Kedokteran*. Available at: http://staff.unila.ac.id/syazilimustofa/2015/03/26/manfaat-serat-bagi-kesehatan/.

Nuraeni, I., 2013. Perbedaan Konsumsi Buah dan Sayur Pada Anak Sekolah Dasar yang Obes dan Tidak Obes. *Ejournal Almaata*, 1(2).

Paxon, Christina., 2010. Childhood Obesity.New Jersey : Princeton – Brookings

Riset Kesehatan Dasar., 2013, *Riset Kesehatan dasar*, Jakarta : Badan Litbangkes Depkes RI.

Santoso, A., 2011. Serat Pangan (Dietary Fiber) dan Manfaatnya bagi Kesehatan. *Magistra*, 75, pp.35–40.

Sartika, R.A.D., 2011. Faktor Risiko Obesitas pada Anak 5-15 Tahun di Indonesia. *Jurnal Makara Kesehatan*, 15, pp.37–43.

Solomon et al., 2014. *Pediatric Skills for Occupational Therapy Assistants*, Philadelphia: Elsevier Mosby.

Vash, P. D., 2015. *The Childhood Obesity Epidemic*, (p. xvii), Oakville: Apple Academic Press.

Wahyu, G.G., 2009. *Obesitas pada Anak*, Jakarta: Bfirst.

Wendt, M.H.D., 2009. *Economic, Environmental, and Endowment Effects on Childhood Obesity and School Performance*, Tesis: University of Minnesota.

Zaman, S. & Ahmed, T., 2013. Risk Factors Associated with Overweight and Obesity Among Urban School Children and Adolescents in Bangladesh: A Case-Control Study. *BMC Pediatrics*.

MODELING PARTICIPANT TOWARD SELF-CARE DEFICIT ON SCHIZOPHRENIC CLIENTS

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ABSTRACT

Introduction: Schizophrenia is a disease which affects the brain, causing impaired perception, thought, emotion, movement, and behavior, such as self-care deficit. Self-care deficit is an impaired ability to bathing, dressing, eating and toileting. Modeling participant is a technique required to address the problem of self-care deficit where clients are taught and trained to meet the needs of self-care. The purpose of this study was to analyze the influence of participants modeling on self-care ability in schizophrenic clients with self-care deficit. **Method:** This study used quasi-experimental design. Sampling was carried out with total sampling to all affordable population comprising 20 respondents in Dr. Radjiman Wediodiningrat Mental Hospital, Lawang. This study analyzed by Wilcoxon Signed Rank Test and Mann-Whitney Test with a significance level of $p \leq 0.05$. **Result:** The results showed the influence of participants modeling on self-care ability in schizophrenic clients with self-care deficit. Wilcoxon Signed Rank Test in treatment group showed p = 0.005 and control group showed p = 0,206. Mann-Whitney Test showed p = 0.030. Modeling participant improved self-care ability in schizophrenic clients with self-care deficit. **Analysis:** Modeling participant will improve cognitive, self-confidence and motivation of schizophrenic clients so that their ability to bathing, dressing, eating and toileting will increase. **Discussion:** Modeling participant can be applied as a technique to improve self-care ability in schizophrenic clients with self-care deficit. For further research can be explored further implementation of the modeling of participants in the group activity therapy.

Keywords: modeling participant, self-care, schizophrenia.

INTRODUCTION

Schizophrenia is a disease which affects brain, causing impaired perception, thought, emotion, movement, and behavior (Videbeck 2008). Symptoms of schizophrenia include delusions, hallucinations, affective flattening or blunt, poor of speaking or meaning, blocking, self-care deficit, low motivation, and self-withdrawal from social (Sadock & Sadock 2010). Schizophrenic client disorders such as behavior derangement, perceptive, cognitive disability will cause the client can't take care of himself adequately. The inability to care for himself will emergence of self-care deficit problem. Self-care deficit is a common problem in schizophrenic clients, both being treated at hospital and community. Direja (2011) states that the self-care deficit is an impaired ability to perform self-care activities (bathing, dressing, eating, toileting). Inability to perform self-care activities without intervention by the nurse, the schizophrenic client will get a higher risk of social isolation or low self-esteem. General nursing interventions addressing self-care deficit problems are taught and trained the client to meet the needs of self-care includes bathing, dressing, eating and drinking properly and also bowel or urinate correctly (Rochmawati et al. 2013). Those nursing actions are implemented through nursing care, but it still found a schizophrenic client with self-care disorder.

Schizophrenia affects approximately 24 million people worldwide (World Health Organization 2014). The prevalence of severe mental disorders (psychosis/schizophrenia) in Indonesia is 1.7 per mil. The prevalence of severe mental disorders in East Java was 2.2 per mil (Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI 2013). Base Health Research (Riskesdas) in 2013, the prevalence of people with mental emotional problem in population over 50 years old found approximately 6%, or about 16 million people, People with severe mental disorders about 400 thousand and 57 thousand people with severe mental disorder have been deprived by the family (Kemenkes 2014). Schizophrenic client with social isolation about 72% and 64% experiencing decreased ability to take care themselves (eating, bathing and dressing) (Surtiningsrum 2011). The percentage of nursing problems by deficit self-care in February 2008 at Marzoeki Mahdi Hospital Bogor reaches 80% (Perendrawati 2008). Initial data has retrieved by researchers from Medical Record of Dr. Radjiman Wediodiningrat Mental Hospital Lawang, the data shown the schizophrenic client who was treated at 28 inpatient room in October 2014 were 567 clients, 70% were male, and 30% were female.

Preliminary studies conducted by researchers at the Kenari room obtain data that 17 out of 41 clients or 41% of clients who were treated had self-care deficit, while in Kakak Tua room were 31%. Nursing interventions for schizophrenic clients with self-care deficit in Kenari room Dr. Radjiman Wediodiningrat Mental Hospital Lawang is nursing care and behavioral therapy. Nursing care includes self-care teaching and motivating clients to perform self-care, but still found schizophrenic clients with impaired ability to take care of themselves.

Self-care deficit is a situation where experiencing barriers to perform self-care activities, such as bathing, changing clothes, eating and eliminating. Barriers/interference ability to take care of themselves at schizophrenic client caused by cognitive or perceptual disturbances (Wilkinson & Ahern 2013). Several disturbance were experienced by the schizophrenic client such as behavior derangement, perceptive, cognitive disability and it will cause the client can't take care of themselves. Clients can be very preoccupation with delusions or hallucinations idea until they fail for carrying out daily activities (Videbeck 2008). If self-care deficit is not treated immediately, it will lead to some new problems and worsen. Teaching techniques required to improve self-care ability through demonstrations by the model. Ormrod (2009) states, as humans we have the ability to imitate others since we were born. A schizophrenic client experiencing cognitive, perceptive and behavior impairment, so it will be easier for them to improve self-care ability by mimicking models in modeling participants. According to Bandura in Ningsih & Sutjiono (2011), modeling participants accelerate behavior changes level, attitudes facing of alarming stimuli.

Modeling technique was done by a therapist/nurse through demonstration to the client about what to do (Nasir & Muhith 2011). Modeling technique has several kinds; live models, symbolic models, multi-model (dual characterizations), self-model, modeling participants (Junaedi & Nursalim 2011). Modeling participants is a way to learn new behaviors through observation from a model, add information through cognitive processes to get output appropriate behavioral changes were modeled (Iswanti 2012). Iswanti Research (2012), shown differences in medication adherence in the intervention group who received behavior therapy of modeling participants, whereas the control group was no differences in medication adherence. Ningsih and Sutijono (2011) research concluded that modeling participant strategy influence improve students skill in class. This indicates that the participant modeling can be used as a therapy to improve the ability of the client. One of nursing intervention in self-care deficit consists of knowledge and ability improvement to perform self-care (Wilkinson & Ahern 2013). Main element of modeling participants consist of rational, modeling, guided participation and strengthening is needed as a technique to implementing the nursing interventions. Client knowledge can be enhanced through rational, clients are taught how to care themselves through modeling and guided participation. Bandura states that learning can be obtained through direct experience, indirectly by observing the behavior of others and their consequences (Corey 2009). Lastly, clients will be motivated to perform self-care activities through strengthening elements. Participants are expected to change behavior from maladaptive become adaptive through modeling participant and increase self-care ability. Based on these, researchers want to know the influence of modeling participants in a schizophrenic client with self-care deficit in Dr. Radjiman Wediodiningrat Mental Hospital Lawang.

METHOD

This study analyzes the influence of modeling participants in a schizophrenic client with self-care deficit. The research design is Quasi-Experiment design. The affordable population in this study are 29 respondents of schizophrenic clients with self-care deficit in Kenari and Kakak Tua room at Dr. Radjiman Wediodiningrat Mental Hospital Lawang. The sampling technique in this study is nonprobability with total sampling technique. The sample consists of affordable population taken by inclusion and exclusion criteria were 20 respondents then divided into treatment group and control group. Independent variables in this study are modeling participants. The dependent variable is self-care ability.

Data was analyzed by Wilcoxon Signed Rank Test to compare client's self-care ability in a schizophrenic client with self-care deficits before and after modeling participants,

significance level established p <0.05. Mann-Whitney is used to determine differences in self-care ability of schizophrenic client with self-care deficit in treatment group and control group with significance level established p <0.05.

RESULTS

Self care ability before modeling participant treatment

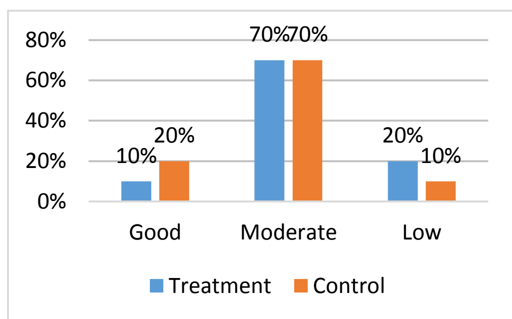

Figure 1 Self Care Ability Before Modeling Participants Treatment.

Figure 1 shows self-care ability of schizophrenic client with self-care deficit before modeling participants intervention, both in control group and treatment group was 70% in enough category. Although they can take care of themselves, respondents still need help in caring for their activities.

Majority bathing ability of respondents need help such as prepare necessary equipment (towels, soap, adequacy of water), watering all the body, rub whole body with soap thoroughly, showering water and rinse entire body until clean, and dry off with a towel. Some respondents independently have the ability to enter and out from the bathroom. This is because some equipment for bathing include towels are often lost or discarded by respondents or taken by other clients who are less cooperative. Respondents are just soaking and scrubbing front part of the body only, while the back and legs are not wetted and rubbed with soap. Some respondents did not bathe with soap and did not wear a towel after have bathed.

Respondent's self-care ability in dressing, need assistance while preparing necessary dressing equipment, gain or change clothes, choose appropriate clothes, cleaning whiskers, and retains appearance at a satisfactory level. Respondents tend to be assisted in dressing and rarely given an opportunity to do it independently. In eating ability of respondents require assistance in preparing equipment and food. The ability of respondent's bowels/urinate need help to go to the toilet, wipe after a bowel/urinate with clean water, and flush toilets cleanly and not smell. Many respondents are urinated no in the bathroom, not wipe and flush the toilet after a bowel /urinate. Respondents argued lazy to do so.

Self-care ability after modeling participant treatment

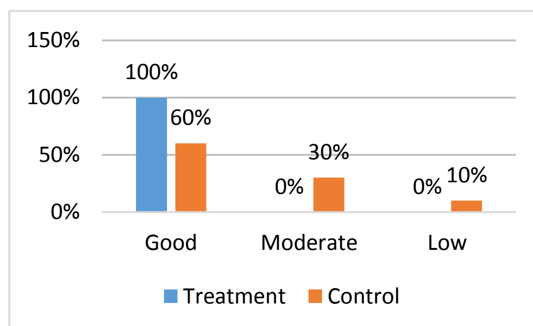

Figure 2 Self-care ability of respondents after Modeling participant treatment

Figure 2 shows that self-care ability of control group after given the treatment was 60% in good level. Whereas treatment group was 100%.

Modeling participant effect in self-care ability.

Based on table 1 the results of Wilcoxon Signed Rank Test showed an increased self-care ability in treatment group before and after modeling participant with $p = 0.005$ means $p < \alpha$, then H1 accepted which means modeling participant effect was significant to self-care ability. The different result obtained in control group amount $p = 0.206$ means $p > \alpha > 0.05$, then H1 rejected which means modeling participants effect was not significant to self-care ability in the control group. Mann-Whitney Test results showed $p = 0.030$ means $p < \alpha < 0.05$, thus self-care ability level after treatment shown significant differences between control and treatment group so it can conclude that modeling participant influence self-care ability in the schizophrenic client.

Table 1 Self-care ability level before and after given modeling participant treatment in control and treatment group at Dr. Radjiman Wediodiningrat Mental Hospital Lawang

No	Criteria	Treatment				Treatment			
		Before		Before		Before		After	
		Σ	%	Σ	%	Σ	%	Σ	%
1	Good	1	10	10	100	2	20	6	20
2	Moderate	7	70	0	0	7	70	3	70
3	Low	2	20	0	0	1	10	1	10
	Total	10	100	10	100	10	100	10	100
Statistics		p = 0.005 Wilcoxon Signed Rank Test				p = 0.206 Wilcoxon Signed Rank Test			
		p = 0.030 Mann-Whitney Test							

DISCUSSION

Schizophrenia is a disease affecting brain causes strange and disturbing of perceptions, thoughts, emotions, movement, and behavior (Videbeck 2008). Symptoms of schizophrenia include delusions, hallucinations, affective flattening or blunt, poor speech or meaning, blocking, self-care deficit, lack of motivation and social withdrawal (Sadock & Sadock 2010). Clients can be very preoccupation with delusions or hallucinations and failed to carry out basic activities in daily life (Videbeck, 2008). Schizophrenic disturbance such as behavior disorders, perceptual, cognitive disability will cause client can not take care of himself adequately. It can be seen from negative and positive symptoms. Clients did not care about individual, events, and activities. The client was not happy in joining life and activity, including self-care activities. Clients also experience loss of motivation and did not have the willing. Inability to take care of himself will emergence of self-care deficit problem.

Respondents with self-care in enough and less level were 41% aged 36-45 years. According to Mariner level of self-care ability of person affected by age, stage of development, life experiences, socio-cultural background, health, and available resources (Andayani 2012). States age is related to experience in dealing various kinds of stressors, the ability to use support resources and skills in coping mechanisms (Stuart & Laraia 2005; Perendrawati 2008). Stressor encountered in adulthood age is more complex than other age ranges, but adulthood is better selecting their basic needs and make a decision or take action which can improve their condition.

The education level of all respondents with less self-care ability are elementary school level. Factors affecting hygiene is knowledge. Personal hygiene knowledge is very important because a good knowledge can improve health level (Potter 2006; Kozier 2010). Clients also need motivation to maintain self-care. Person with higher education will get more knowledge about self-care so the motivation to care for themselves higher. Stuart & Laraia (2005), stating that education becomes a benchmark of client's ability to interact effectively. Education affects client's ability to make decisions, utilize surrounding information, receive feedback and skills, and motivation to solve problem itself.

Respondents with enough and less self-care ability in this study 82% were not working. Townsend (2005) in Parendrawati (2008) suggest that low socioeconomic is one of the social factors lead to high rates of mental disorders including schizophrenia. Work problems related to poverty, inadequate facilities, inadequate need of food, and housing, low health care quality of family members will trigger to limited coping on stressful situations. Respondents were not working have economic problems or low economic status. Economic problem was leading risk of developing schizophrenia. Economic conditions also affect to the fulfillment of daily needs, including needs their care.

All respondents with less self-care ability level were unmarried status. Dantas et. al. (2011) suggest that the incidence of schizophrenia is most occurs in not married status. The family role is very important to help and to support of client’s self-care, so clients with not married status possible get the support from family to resolve their health problems.

Most respondent amounts 76% with enough, and less self-care ability level were 1-2

times treated. Research of Andayani (2012) concluded that there is a significant correlation between frequency of respondents treated and self-care ability. Stuart and Laraia (2005) states that timing and duration of schizophrenic client exposure by stressor impact in the independence of self-care. A new schizophrenic client while first time exposing stressor require intensive efforts as primary prevention. Respondents with 1-2 times treated require intensive effort involving backup sources which owned by individuals, preventing self-care deficit becomes more difficult to overcome.

Respondents with enough and less self-care ability level as many 82% are schizophrenia hebephrenic clients. Schizophrenia hebephrenic characteristic is irresponsible and unpredictability behavior, mannerism, tendency to be alone, hollow and empty feeling. Affective, encouragement impulse, and thought processes disorders prominent (Amin 2009). These symptoms will influence to client's self-care ability.

As many as 66% of respondents with less self-care ability receive combination therapy of typical and atypical antipsychotics. Typical antipsychotic overcomes positive signs of schizophrenia such as delusions, hallucinations, thought disorder, and other psychotic symptoms, but does not have a visible effect on negative signs. Atypical antipsychotics can reduce psychotic symptoms and useful to reduce negative symptoms such as not having the wish and motivation, social withdrawal and anhedonia (Videbeck, 2008). Schizophrenia handling is not only by psychopharmacy but also by nursing care. The goal of nursing care in self-care deficit client is improving client's knowledge and self-care ability.

The majority of client's self-care ability before given modeling participant treatment are enough level and adequate enough to take care of them, but should be helped and motivated by the nurse. This is due to client's condition who are still experiencing positive and negative symptoms of schizophrenia such as hallucinations, fragmented thoughts or ideas, careless feeling of people, activities, events, tendency to be very little speaking or poor meaning, unenjoyment living, activities, or relationships, loss of motivation to act or perform the tasks, lack of desire, ambition or motivation, dull or limited circumstances emotional feeling, social withdrawal.

All respondents of treatment group after modeling participant treatment has increased to be a good level of self-care ability. The age range respondents of treatment group are 18-55 years or adulthood. According to Siagian (1995) in Parendrawati (2008), the older person related to technical maturity, psychological maturity which shows the soul maturity, it means more wisdom, able to think rationally, control emotions and considerate of others. Respondent age affects to decision-making ability and take action for self-care improvement.

As many as 90% of respondents in the treatment group with good self-care ability ever get one time of care frequency. Stuart and Laraia (2005) states that timing and duration of stressor exposure influence the achievement of self-care independent in schizophrenic clients. A new schizophrenic client when first time exposed stressor requires intensive efforts as primary prevention. Modeling participant is one of intensive efforts to prevent self-care deficit problems from becoming more complex. The treatment group was trained intensively to take care for themselves as bathing, dressing, eating, and bowel/urinate and trained to practice these capabilities. Self-care ability of control group in enough and less level have 2-3 times treated frequency and unmarried status. This indicates the client tendency to relapse due to lack of family support. Unmarried respondents lived with their parents, but the case is the parents too old, so an intensive effort to overcome self-care deficit problems at home are less than optimal.

As many as 70% of respondents in the treatment group with good self-care ability have elementary school education level. Ajzen and Fishbein (1980) in Parendrawati (2008) suggests the 'theory of reasoned' which cognitive process is people basis to decide or take appropriate behavior, systematically using nearby available information. The nurse duties as an educator are providing self-care knowledge on the schizophrenic client. In this study, respondents were taught how to take care of themselves well so that respondent can improve their self-care ability.

Self-care ability in treatment group increases significantly at 20% respondents, which previously in less ability level to be good ability level. Type of drugs taken by respondents is typical and atypical combination therapy. Typical antipsychotic overcomes positive signs of schizophrenia such as

delusions, hallucinations, thought disorder, and other psychotic symptoms, but does not have a visible effect on negative signs. Atypical antipsychotics can reduce psychotic and negative symptoms such as low motivation, social withdrawal, and anhedonia (Littrell & Littrell, 1998, in Videbeck, 2008). The main goal of combination therapy is improving the effectiveness of antipsychosis and treatment outcome in resistant patients, strengthen antipsychosis potential effect, reducing the risk of side effects in certain combinations (Revenger 2010). Giving antipsychotics may reduce negative symptoms and positive symptoms, moreover support a better understanding of modeling participants.

In the control group are found 10% respondents who experience decreased self-care ability. These respondents get typical antipsychotic. Typical antipsychotic overcomes positive signs of schizophrenia such as delusions, hallucinations, thought disorder, and other psychotic symptoms, but does not have a visible effect on the negative signs (Littrell & Littrell, 1998, in Videbeck, 2008). Atypical antipsychotics are better in improving the performance of client function than typical antipsychotics because it affects larger negative symptom improvement (Revenger, 2010). Antipsychotic treatment affects schizophrenia symptoms, so it will influence respondents to understand the modeling participants.

In general, self-care ability of the treatment group and the control group had increased. It because both treatment group and control group respondents get nursing care and psychopharmacy therapy. Increasing self-care ability in the control group was not significant compared treatment group.

Modeling participants in the treatment group were given two times in meeting for each topic as bathing, dressing, eating, and bowel/urinate. Every topic is given in a single day. Models in this study is schizophrenic clients with independent self-care ability and one same room with respondent. Researchers also conducted demonstrations to re-strengthening of topics were taught. The main focus of nursing care in self-care deficit client consists of two things: increase client's self-care knowledge and ability, and assist clients on their limitations and give caring which client can't do (Wilkinson & Ahern 2013). Purwanto (1999) in Parendrawati (2008) characteristic of learning is the change in people who learn, changes appears from not capable to be able. Modeling participants is a technique used in the treatment group to improve knowledge and ability. Researchers the model who have similarity characteristics with respondents so can motivate treatment groups to perform self-care independently, and changes in self-care ability became significantly.

Modeling participant implementation purpose improving cognitive, self-confident, and motivation through implementing basic components of modeling participant such rational, modeling, guided participation and successful experience/reinforcement. Modeling participants as techniques used to form a new behavior, improve skills and minimize avoidable behavior. In this study, new behaviors and skills which improved is the self-care ability (Iswanti 2012). Modeling participants also help clients performing a new behavior which obtains through appropriate way and time (Junaedi & Nursalim 2011). Researchers are applying modeling participants to change the maladaptive behavior of respondents to be more adaptive.

Modeling participants consist of four topics; bathing, dressing, eating, toileting. One topic is given in one day, and every topic is repeated twice. In practice, researchers explain the benefits of proper self-care (bathing, dressing, eating, and toileting) also related tools which needed. It makes respondents get a better understand about the importance of self-care. Furthermore, Independent schizophrenia model demonstrates self-care ability and respondent are giving attention. Researchers also demonstrate self-care ability again as reinforcement. The model who has to resemble character with respondent increase respondent motivation. These explanation and demonstration improve respondent-cognitive ability as knowing benefits and proper self-care manner.

Respondent is practicing self-care ability such as bathing, dressing, eating, bowel/urinate guided by researchers. Researchers also give positive feedback when respondents successfully practice self-care ability properly. Some respondents get difficulties when practicing self-care ability, but researchers continue to guide and motivate them by the state that model which respondent friends can do. It increases respondents self-confidence and motivation to try again.

Increased self-care ability in treatment groups after given modeling participant was appropriated with Iswanti study (2012), which indicates differences adherence medication in the treatment group who received behavior therapy as modeling participants, whereas no differences in the control group. Research of Ningsih & Sutjiono (2011) concluded modeling participant strategy increase student opinion ability in class.

Bandura (1969) in Corey (2009), states that learning can be obtained through direct experience, also can be obtained indirectly by observing other person behavior and consequences. There are two types of learning through observation, first learning through observation can be occurred by other people circumstances/conditions. Second; learning through imitate observation by model behavior (Boeis 2007; Winarto 2011). Respondents are schizophrenic clients with cognitive and perceptions disorder, so it will be easier for respondents to learn by watching and imitating. In modeling participants, respondents learn to observe model behavior who schizophrenic client with independent self-care performance.

The most efficient model was using the therapist as a model, but bigger advantage gained when use model who similar with the client (Ningsih & Sutjiono 2011; Junaedi & Nursalim 2011). The using of collaborative models by researchers and schizophrenic client give greater advantage such motivation and confidence, respondents prefer imitate their friends whose schizophrenic in the same room. In this research, there were two models who have gone home before the research end. These improve respondent motivation indirectly, motivation to improve their self-care ability because if they have independence as a model then will go home quickly.

Implementation of modeling participants affects self-care ability through the learning process. Gibson stated that ability is something learned, allows a person to do something as well, both in intellectually and physically (Syarifuddin 2012). Respondents were taught self-care as well. Thus self-care ability both physically and cognitively were increased.

Modeling participants are one form of modeling which the key element in modeling process (Winarto 2011). While according to Bastable (2002) modeling participants is attention, recall (retention), reproduction of motion (reproduction), and motivation. Attention means before imitating the model, respondent should pay attention or observe model behavior to learn. Recall (retention) is the ability to retain information is essential for the learning process. Clients must record this event in their memory. Reproduction of motion (reproduction) means after client knows and learn a behavior, clients can show their ability or produce which stored in the form of behavior. Mental exercise, direct application, and corrective feedback reinforce this behavior imitation. Motivation; motivation is important as client's driving to continue doing something. Vicarious reinforcement and punishment influence this process. Learning process in modeling participants improves self-care ability in the treatment group.

CONCLUSION

There are significant differences of respondent self-care ability in treatment group before and after given modeling participants.

Modeling participants can be used as supporting therapy to improve self-care ability in a schizophrenic client with self-care deficit problem.

REFERENCES

Amin, M., 2009. *Peran Daerah Tempat Tinggal Terhadap Kejadian Penyakit Skizofrenia Pada Penderita Gangguan Jiwa Yang Dirawat Inap Di Rumah Sakit Dr Ernaldi Bahar Provinsi Sumatera Selatan Tahun 2007*. Universitas Indonesia. Available at: http://lib.ui.ac.id/opac/ui/.

Andayani, S., 2012. *Hubungan Karakteristik Klien Skizofrenia Dengan Tingkat Kemampuan Perawatan Diri di Ruang Rawat Inap Psikiatri Wanita Rumah Sakit Marzoeki Mahdi Bogor*. Universitas Indonesia. Available at: http://lib.ui.ac.id/opac/ui/detail.jsp?id=20311742&lokasi=lokal.

Badan Penelitian dan Pengembangan Kesehatan Kementrian Kesehatan RI, 2013. *Riset Kesehatan Dasar*, Available at: www.litbang.depkes.go.id.

Bastable, S.B., 2002. *Perawat Sebagai Pendidik: Prinsip-Prinsip Pengajaran dan Pembelajaran*, Jakarta: EGC.

Boeis, K.K. et. al., 2007. *Praktik keperawatan Profesional: Konsep & Perspektif*, Jakarta: EGC.

Corey, G., 2009. *Teori dan Praktek Konseling*

dan Psikologi, Bandung: PT Refika Aditama.

Dantas et. al., 2011. Insight Controlled For Cognition in Deficit and Nondeficit Schizophrenia. *Schizophrenia Reseach*, 128, pp.124–126. Available at: http://www.elsevier.com/locate/schres.

Direja, A.H.S., 2011. *Buku Ajar Asuhan Keperawatan Jiwa*, Yogyakarta: Nuha Medika.

Iswanti, D.I., 2012. *Pengaruh Terapi Perilaku Modeling Partisipan Terhadap Kepatuhan Minum Obat Pada Klien Penatalaksanaan Regimen Terapeutik Tidak Efektif di RSJD Dr. Amino Gondohutama Semarang*. Universitas Indonesia. Available at: http://lib.ui.ac.id/opac/ui/detail.jsp?id=20300661&lokasi=lokal.

Junaedi, H. & Nursalim, M., 2011. Penerapan Strategi Modeling Partisipan Untuk Meningkatkan Keterampilan Komunikasi antar Pribadi Siswa. *Psikologi Pendidikan Dan Bimbingan*, 12(1). Available at: http://ejournal.unesa.ac.id/index.php/ jurnal_ppb/article/view/5424/baca-artikel.

Kemenkes, 2014. *Naskah Undang-Undang Kesehatan Jiwa Disetujui*, Available at: http://www.depkes.go.id/article/view/201407200002/naskah-undang-undang-kesehatan-jiwa-disetujui.html.

Kozier, B., 2010. *Buku Ajar Fundamental Keperawatan Konsep Proses dan Praktik*, Jakarta: EGC.

Nasir, A. & Muhith, A., 2011. *Dasar-dasar Keperawatan Jiwa: Pengantar dan Teori*, Jakarta: Salemba Medika.

Ningsih, P. & Sutjiono, 2011. Penerapan Strategi Modeling Partisipan Untuk Meningkatkan Kemampuan Mengungkapkan Pendapat. *Psikologi Pendidikan dan Bimbingan*, 12. Available at: http://ejournal.unesa.ac.id/index.php/jurnal_ppb/article/view/5436/baca-artikel.

Ormrod, J.E., 2009. *Psikologi Pendidikan Membantu Siswa Tumbuh dan Berkembang Jilid 2*, Jakarta: Penerbit Erlangga.

Perendrawati, D.P., 2008. *Pengaruh Terapi Token Ekonomi Pada Klien Defisit Perawatan Diri di Rumah Sakit Dr Marzuki Mahdi Bogor*. Universitas Indonesia. Available at: http://lib.ui.ac.id/opac/ui/detail.jsp?id=126565 &lokasi=lokal.

Potter, P.A., 2006. *Buku Ajar Fundamental Keperawatan: Konsep, Proses, dan Praktik*, Jakarta: EGC.

Revenger, M.J., 2010. *Perbandingan performa fungsi pasien skizofrenia yang mendapat terapi tunggal dengan terapi kombinasi antipsikotika di rumah sakit Cipto Mangunkusumo (Periode Desember 2011 - Mei 2012)*. Universitas Airlangga. Available at: http://lib.ui.ac.id/opac/ui/.

Rochmawati, D., Keliat, B. & Wardani, I., 2013. Manajemen Kasus Spesialis Jiwa Defisit Perawatan Diri Pada Klien Gangguan Jiwa di RW 02 dan RW 12 Kelurahan Baranangsiang Kecamatan Bogor Timur. *Jurnal keperawatan Jiwa*, 1(2), pp.107–120. Available at: portalgaruda.org/?ref=browse&mod=viewissue&journal=5090 Vol 1, No 2 (2013): Jurnal Keperawatan Jiwa.

Sadock, B. & Sadock, V., 2010. *Kaplan & Sadock Buku Ajar Psikiatri Klinis*, Jakarta: EGC.

Stuart, G. & Laraia, 2005. *Principles And Practice Of Psyhiatric Nursing*, St Louis: Mosby Year B.

Surtiningsrum, A., 2011. *Pengaruh terapi Suportif Terhadap Kemampuan Bersosialisasi Klien Isolasi Sosial di Rumah Sakit Jiwa Daerah Dr. Amino Gondohutomo Semarang*. Universitas Indonesia.

Syarifuddin, 2012. *Pendidikan dan Pemberdayaan Masyarakat*, Medan: Perdana Publishing.

Videbeck, S., 2008. *Buku Ajar Keperawatan Jiwa*, Jakarta: EGC.

Wilkinson, J. & Ahern, N., 2013. *Buku Saku Diagnosis Keperawatan: Diagnosis NANDA Intervensi NIC Kriteria Hasil NOC*, Jakarta: EGC.

Winarto, J., 2011. Teori Belajar Sosial Albert Bandura. Available at: http://edukasi.kompasiana.com/ 2011/03/12/teori-belajar-sosial-albert-bandura-346947.html.

World Health Organization, 2014. Schizophrenia. Available at: http://www.who.int/mental_health/management/ schizophrenia /en/#.

DEVELOPMENT OF TRANSACTIONAL COMMUNICATION MODEL FOR MIDWIFE AND POSTPARTUM MOTHER ON EXCLUSIVE BREASTFEEDING

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ABSTRACT
Introduction. Exclusive breastfeeding has become a major issue in Surabaya because the number of exclusive breastfeeding coverage are less than 80% which is below the national target. The purpose of this study was to develop a transactional communication model based on management between midwife and postpartum mother on exclusive breastfeeding. **Method**. The design used in this study was cross-sectional with 175 postpartum mothers in public health center Surabaya as the samples that recruited by purposive sampling. Questionnaires were used as instrument and data were analyzed by using descriptive statistical test and *Partial Least Square (PLS).* **Result.** The result showed that predisposing factors and enabling factors were able to improve the practice of exclusive breastfeeding directly or indirectly by transactional communication with t-table (>1.96). However, reinforcing factors could not directly improve the practice of exclusive breastfeeding. This study indicates that practice of exclusive breastfeeding could be improved with transactional communication based on human interaction theory. **Discussion and conclusion**. The implementation of transactional communication between midwife and mother would be able to optimize the predisposing factors, enabling factors, and reinforcing factors on the practice of exclusive breastfeeding.

Keywords: transactional communication, practice of exclusive breast feeding.

INTRODUCTION

The Indonesian health law number 36, 2009 in article 128 explains that every baby is deserved to get exclusive breastfeeding from birth to six months, except on medical indications. As part of the government's commitment to increase breastfeeding rates, Indonesia has set up Indonesian Government Regulation number 33 of 2012 about exclusive breastfeeding. The regulation makes it possible to create an environment in which empowers women to exclusively breastfeed for the first six months and continue breastfeeding for two years or more. But this effort has not fully implemented by health worker and society. The most reasoning used are not enough breast milk, sick baby, mother's condition and various other reasons. In the end, the best solution is infant formula milk. The regulation of rooming in at the hospital, maternity clinics, and private midwives can not be implemented properly because of the limited space. Thus the mother and the baby is treated separately and might inhibit exclusive breastfeeding.

Based on data from Riskesdas on 2013 and Ministry of Health, exclusive breastfeeding coverage could not reach the Indonesian government target by 80%. Those caused by the high number of pre-lacteal feeding, working mother, and infant formula milk. Pre-lacteal feeding at the age of 0-5 months is an indicator of exclusive breastfeeding failure. The percentage of pre-lacteal feeding at 0-5 months is 44.7%. While the percentage of exclusive breastfeeding based on Surabaya City Health profile in 2012 was 60.52%, then increase slightly in 2013 become 62.67% and 64.33% in 2014. For the East Java province, the percentage of exclusive breastfeeding was 64.08% in 2012 and 68.48% in 2013. Although there was an increasing number, those indicate that the exclusive breastfeeding coverage, both in Surabaya and East Java still on the below of Government's target.

Based on Afifah's research in 2007, there were 11 out of 12 subjects failed to provide exclusive breastfeeding because most of them had given pre-lacteal feeding and there was only one subject who had been success giving exclusive breastfeeding until the baby was older than four months. The predisposing factors of the failure of exclusive breastfeeding are the lack of knowledge about exclusive breastfeeding and their beliefs about pre-lacteal feeding, hence encourage low motivation to provide exclusive breastfeeding. The enabling factors are a lack of counseling

or guidance about exclusive breastfeeding and unavailability of the rooming-in facility in clinical settings. The reinforcing factors are the lack of direction from midwife about breastfeeding and the strong influence of the mother (grandmother) for infants care in non-exclusive breastfeeding (Afifah 2007). One effort to improve the coverage of exclusive breastfeeding is their transactional communication between health worker and mother by adopting the behavior theory of Lawrence Green. The purpose of this research is to develop a model of transactional communication between midwife and patient on exclusive breastfeeding by postpartum mothers at health center in Surabaya.

METHODS

This study design was a cross-sectional (observatory). Samples were postpartum mother treated at health centers in Surabaya city. The sample size was determined by rule of the thumb formula. In this study, the number of the parameter was 37, so the samples were 175 respondents taken by multi-stage random sampling technique. There was 11 health center chosen by proportional random sampling. Respondent were determined by purposive sampling. Data analysis techniques used inferential analysis techniques to test the empirical model and the hypothesis proposed by the researcher. Inferential analysis using Structural Equation Modeling (SEM) was based on variance, called Partial Least Square (PLS). The research location was at the health centers in Surabaya which provided normal childbirth service. There was 21 health centers hospitalization.

RESULT

According to table 1, good knowledge, positive attitude, intermediate education, low socio-economic and support tradition were the dominant number of predisposing factors. Among enabling factor (table 2), good worker behavior, support infrastructure, and positive attitudes revealed the highest percentage. Among reinforcing factors namely good and positive public figure and understand legislation (table 3). The highest percentage of good seci 1 and good seci 2 was found within transactional communication factor (table 4).

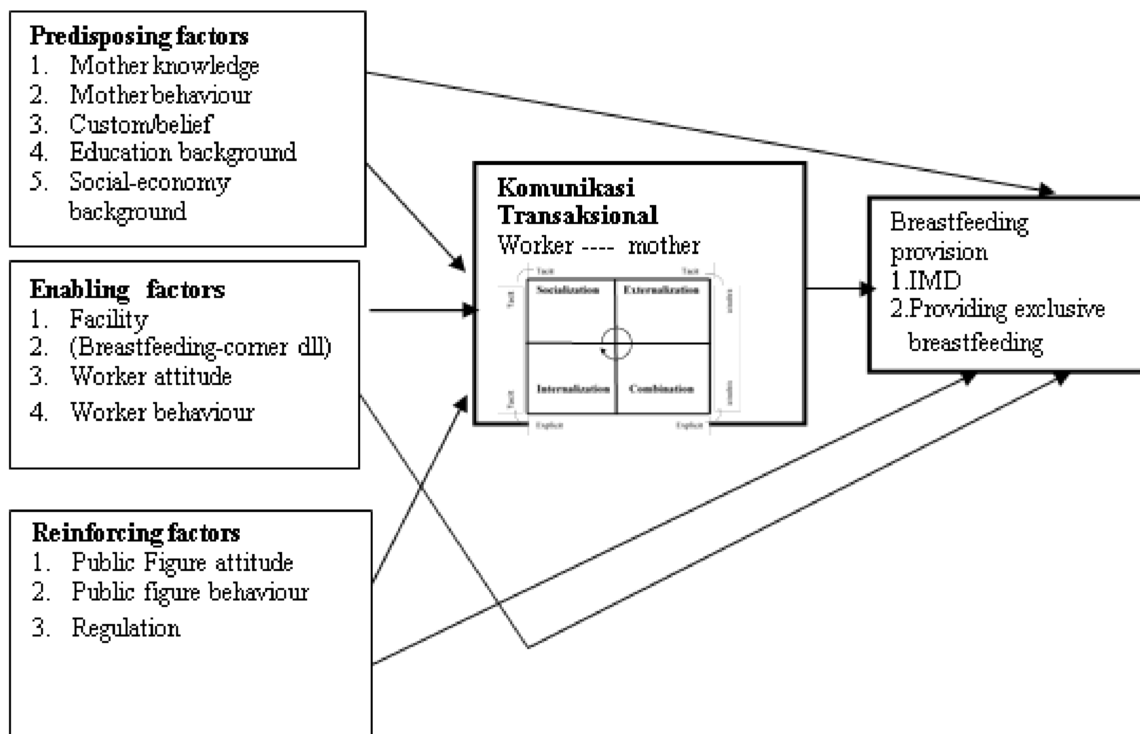

Figure 1. Model of Transactional Communication between Midwife and Patient based on Knowledge Management on Exclusive Breastfeeding Provision by Postpartum Mother

Table 1. Distribution Respondent based on Variable of *Factor predisposing*

No.	***PredisposingFactor***		**Frequency**	**Percentage**
	Dimension	**Category**		
1	Knowledge	Low	49	28.0
		Moderate	41	23.4
		Good	85	48.6
2	Attitude	Negative	20	11.4
		Positive	155	88.6
3	Education	Basic	66	37.7
		Intermediatte	87	49.7
		High	22	12.6
4	Socio-economic	Low	86	49.1
		Moderate	61	34.9
		High	28	16.0
5	Tradition	Does not support	32	18.3
		Support	143	81.7

Table 2. Distribution of Respondent based on *Enabling Factor* at Puskesmas, Surabaya, 2016

No.	***Enabling Factor***		**Frequency**	**Percentage**
	Dimension	**Category**		
1	Worker Behavior	Less	23	13.1
		Good	152	86.9
2	Infrastructure	Does not support	58	33.1
		Support	117	66.9
3	The attitude of worker	Negative	19	10.9
		Positive	156	89.1

Table 3. Distribution of respondents based on *Reinforcing Factor* at Puskesmas, Surabaya, 2016

No.	***Reinforcing Factor***		**Frequency**	**Percentage**
	Dimension	**Category**		
1.	Public Figure behavior	Less	78	44.6
		Moderate	0	0
		Good	97	55.4
2.	Legislation	Missunderstand	63	36.0
		Understand	112	64.0
3.	Public Figure attitude	Negative	33	18.9
		Positive	142	81.1

Table 4. Distribution of Respondent based on Transactional Communication Factor

No.	**Transactional communications**		**Frequency**	**Percentage**
	Dimension	**Category**		
1.	Seci 1	Less	28	16.0
		Moderate	60	34.3
		Good	87	49.7
2.	Seci 2	Less	30	17.1
		Moderate	58	33.1
		Good	87	49.7

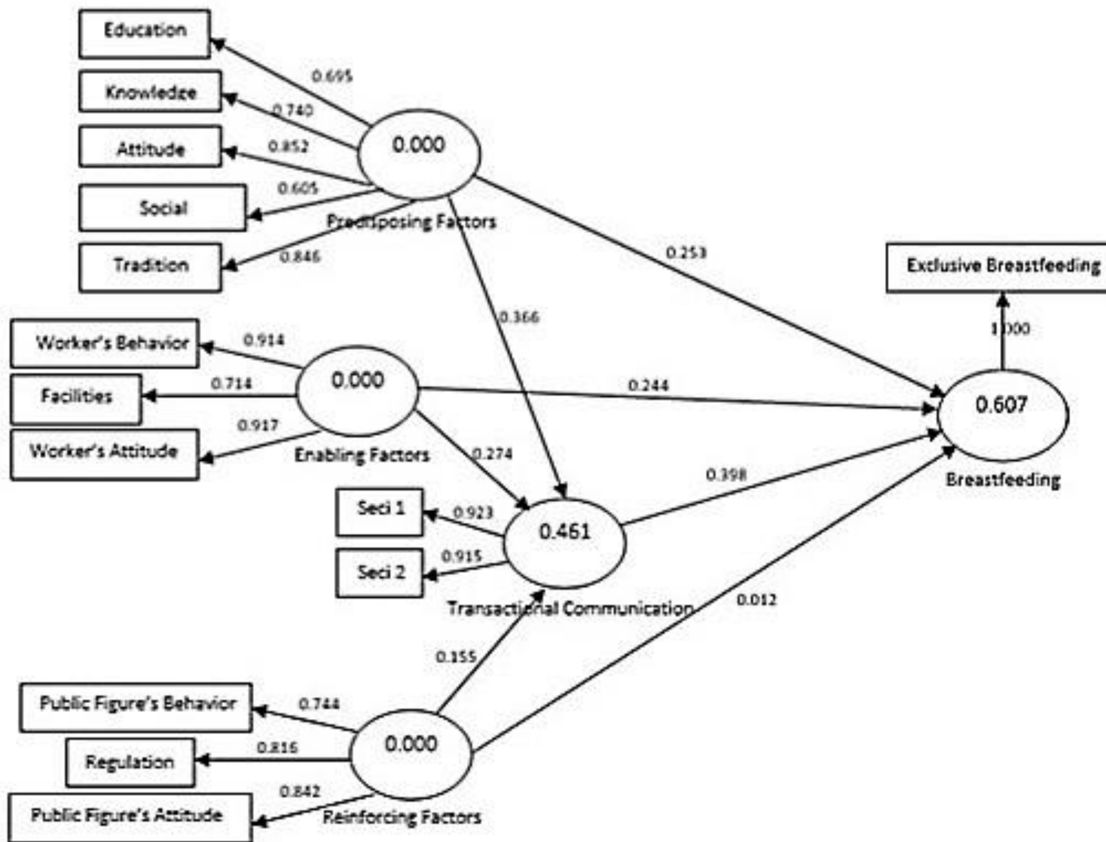

Figure 2. Result of Outer Model with Loading Factor Value using Partial Least Square (PLS)

The calculation shows predisposing factor variables, which were education, knowledge, attitude, socio-economic, and tradition, showed five dimensions had a *loading factor* value over 0.5 and t value was greater at 1.96. Among those five dimensions, which the greatest *loading* value was the attitude. Therefore, the attitudes, including the most influential dimension on the *predisposing factor.*

The enabling factor variable*,* which consists of worker behavior, infrastructure, and worker attitude showed three dimensions had loading factor value over 0.5 and t value was greater than it at 1.96. Among those dimensions, the worker attitude was the highest at 0.9170. Therefore, the worker attitude was the most influential dimension on *enabling factor.*

Moreover, reinforcing factors*,* such as public figure attitude, public figure behavior, and legislation, showed loading factor value at 0.5 and t was higher than the former at 1.96. Among them attitude of public figure was the highest at 0.8417. So, Public figure attitude was the most influential dimension on *reinforcing factor.*

Transactional communication variable shows that the dimensions of the first and second Seci had loading factor value over 0.5 and the greater value was t at 1.96. The greatest loading factor value was Seci 1 at 0.9231. Thus, the Seci 1 was the most influential dimension of transactional communication.

In breastfeeding variable, the number of dimensions was only one. So the value of loading factor for variable breastfeeding was 1. All variable constructs showed all variables had AVE value over 0.5. So that, the entire latent variables had good validity. Results of Cross loading for education, knowledge, attitudes, socio-economic, and tradition had a greater value on predisposing factor than other variables. Thus, the dimensions of a predisposing factor were different with another dimension.

Cross loading value of worker behavioral dimension, infrastructure and worker attitude were bigger than other

variables. So, the dimension of enabling factor was different with another dimension. Cross loading which was public figure attitude, public figure behavior, and legislation were higher than another variable. Therefore, the dimension of the reinforcing factor was different with another dimension. Cross loading value for Seci 1 and Seci 2 was greater than other variables. So, the dimension of transactional communications was different dimension with another dimension. The test results indicate that the constructs (variables) had a composite reliability value over 0.7. So it is reliable.

Inner Model Testing Stage (Structural Model Stage)

This structural model phase aims to determine whether there is influence between variables or not. The test is carried out by using t-test.Variable will have influence if t value is greater than t table. T table was at 1.96. Likewise, if the relationship among variables are negative, t value is smaller than t table. The calculation result can be seen in figure 3.

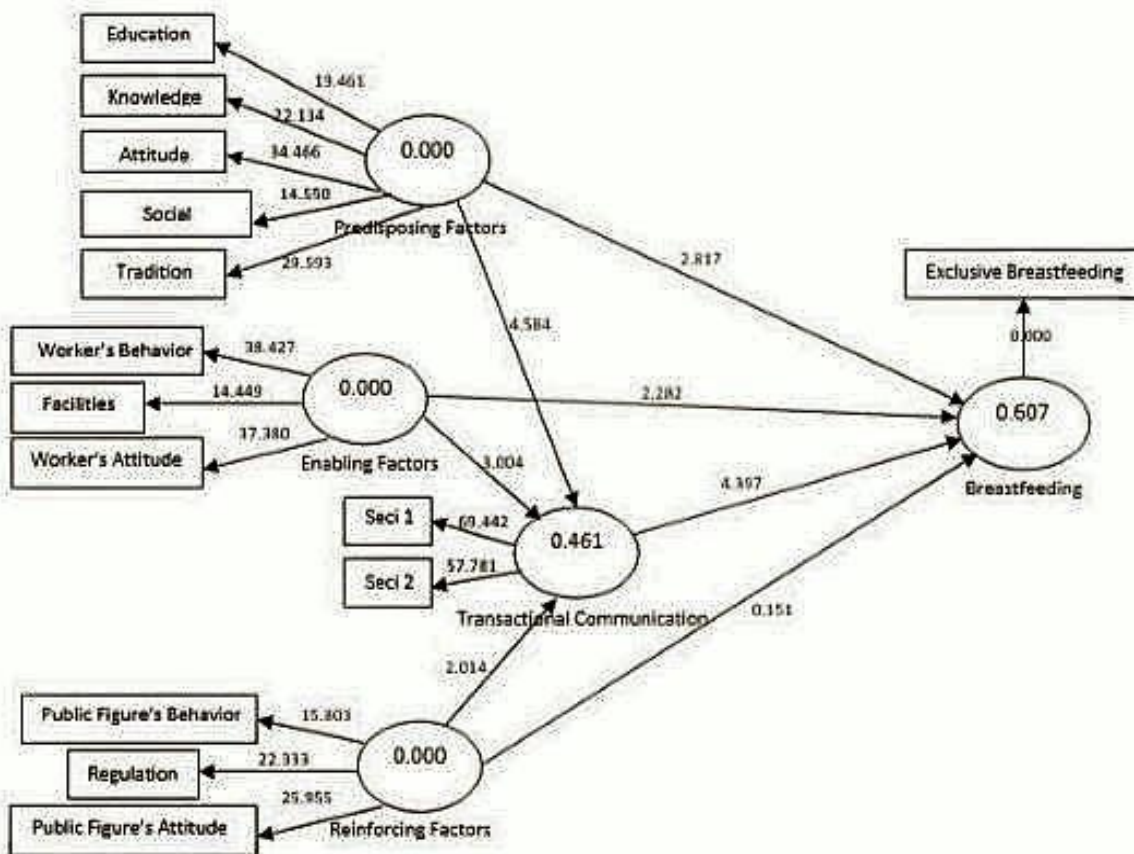

Figure 3. Result of Inner Model Test (Structural Model Stage)

Table 5. Path coefficient value and the t-Test among Variable

Relationship between Variables	path coefficients	t Statistics	Information
Predisposing factor → Communication Transactional	0.3660	4.5837	Ho rejected
Enabling factor → Communication Transactional	0.2740	3.0040	Ho rejected
Reinforcing factor → Communication Transactional	0.1553	2.0144	Ho rejected
Predisposing factor → Breastfeeding	0.2534	2.8172	Ho rejected
Enabling factor → Breastfeeding	0.2444	2.2818	Ho rejected
Reinforcing factor → Breastfeeding	0.0119	0.1505	Ho accepted
Transactional Communications → Breastfeeding	0.3981	4.3971	Ho rejected

Based on table 5, coefficient estimation of predisposing factors, reinforcing factors, and enabling factors for transactional communication had a positive value. It means the more improvement of those factors will increase the transactional communication. While the coefficient estimation of predisposing factors, reinforcing factors, and enabling factors for breastfeeding also had positive value, means that breastfeeding will be enhanced if those factors are increased. The positive value also seen on the coefficient estimate for transactional communication on breastfeeding, it means that transactional communication will lead to enhancement of breastfeeding.

T-test aimed to observe whether there was a direct influence or not. Based on t test on table 5, it showed that predisposing factors, enabling factors, and reinforcing factors had to influence to transactional communication. While the factors which had influenced to breastfeeding were predisposing factors, enabling factors, and transactional communication. Reinforcing factors did not had influence the breastfeeding behavior.

Testing Goodness of Fit

Test on the structural model was conducted with looking at the value of R-Square which is a test for the *goodness-fit model.* Testing of the model can be seen through R-square value on equality among latent variables. The value R^2 explains that how large exogenous (independent/free) in the model can explain the endogenous variables (dependent / dependent).

R square shows that predisposing factor, enabling factor, reinforcing factor influenced communication transactional which was at 0.4610 or 46.10%. Meanwhile, the influence of predisposing factor, enabling factor, reinforcing factor and communication transactional on breastfeeding was at 0.6069 or 60.69%.

In addition, the R-square model is also evaluated with the value of Q-square. The value of the Q-square can be calculated with: Q^2= 1 - (1 -0.4610) (1 -0.6069) = 0.788. Based on the result, it can be seen that the Q-square value was at 0.788. Because the value Q2 > 0, it can be concluded that the variables of a predisposing factor, enabling factor, reinforcing factor to the transactional communication had a good prediction of the breastfeeding.

The result of the AVE average was 0.7569 while the average of $R^2$was 0.5340 so that the Goodness of Fit Index (GOF) value was 0.6358. This value was good or great category. According to Tenenhau (2004), the value of GoF small = 0.1, GoF medium = 0.25 and GoF great = 0.38.

Table 6 indicates that the indirect relationship which was greater than the direct relationship was indirect relationship reinforcing factor against breastfeeding. However, other relationships in its direct influence were greater than its indirect influence, the namely direct relationship between predisposing factor and breastfeeding, and also enabling factor and breastfeeding.

Focus Group Discussion (FGD)

FGD conducted to get feedback from the coordinator of the health center, midwife, and postpartum mother at a health center in Surabaya about the strategic issues. The results and recommendation of FGD described in table 7.

Table 6. Indirect Relation and Its Comparison to Direct Influence

Indirect relationships	Originally coefficient	IndirectCoefficient	direct coefficient
predisposing factor➔breastfeeding	predisposing factor➔Transactional communications➔breastfeeding	0.3660x0.3981=0.1457	0.2534
enabling factor➔breastfeeding	enabling factor➔Transactional communications➔breastfeeding	0.2740x0.3981=0.1091	0.2444
reinforcing factor➔breastfeeding	reinforcing factor➔Transactional communications➔breastfeeding	0.1553x0.3981=0.0618	0.0119

Table 7. The result and recommendation of FGD

No	Theme	Recommendation
1.	The lack of commitment in providing exclusive breastfeeding her baby	• Personal counseling on exclusive breastfeeding had to be given from commencing pregnant to childbirth. • Improving maternal commitment to keep providing her breast milk by emphasizing on disadvantages of no giving exclusive breastfeeding and the benefits of breastfeeding, especially for health and child development.
2.	The lack of parent in-law (grandmother of the baby) support	• Socialization to grandmother about exclusive breastfeeding • Involving grandmothers in implementation of exclusive breastfeeding counseling • Class formation for grandmother that is focused on the material of exclusive breastfeeding and newborn care

Table 8. Development of Transactional Communication Model between midwife and postpartum mother

Structure	Standard	Development
Low practice/ behavior of mother in exclusive breastfeeding	1. Breastmilk is given from newborn to 6 months, and it continues to breastfeed until the child is 2 years old. 2. Personal counseling to a mother with transactional communication approach starting from pregnancy to childbirth.	1. Personal counseling on exclusive breastfeeding with transactional communication approach. 2. Increasing commitment to exclusive breastfeeding mother to her baby 3. Improving knowledge of grandmother about exclusive breastfeeding 4. Transactional communication is not only for mother but also for grandmother. Grandmother formation focuses on exclusive breastfeeding

DISCUSSION

The predisposing factor can improve transactional communication. Predisposing factor consists of education, knowledge, attitude, socioeconomic and tradition. Good knowledge, good education background, positive attitude of mother who support exclusive breastfeeding, proper learning, and positive tradition/culture that supports exclusive breastfeeding are factors that help health professional (midwife) to perform transactional communication based on knowledge management. Only a few mothers who still believe that breastfeeding will deform the breast and mothers are not allowed to eat certain food like egg, fish, chicken, and meat during breastfeeding. Those indicate only a few mothers had poor knowledge and attitude about breastfeeding.

Transactional communication can be delivered by socialization, counseling, and guidance on breastfeeding, information, and education about the benefit of breastfeeding, mother nutrition during lactation, and the negative consequences of infant formula. This communication can be done to the mother since the pregnancy until the period of exclusive breastfeeding. This is in accordance with Government Regulation No. 33 of 2012 about exclusive breastfeeding (Indonesia n.d.).

The *enabling factor* can improve transactional communication. *Enabling factor* consists of worker behavior, infrastructure, worker attitude, and communication media. In health care settings, personal communication occurs between health worker and client. In this study, interpersonal communication carried out between midwife and pregnant or postpartum. Interpersonal communication is effective communication between health worker and client. The most important media in interpersonal communication is language, both spoken and writing (Notoatmodjo 2007).

There are still some health centers not supporting to facilitate exclusive breastfeeding such as breastmilk storage because of limited

funds. The condition is not a significant problem because the mother usually returns 24 hours postpartum. On the other hand, midwives have been providing information to mothers about the importance of exclusive breastfeeding as well as the attitude of health worker who supports exclusive breastfeeding. It needs a commitment from all health workers, especially midwives to the success of exclusive breastfeeding. It has been stated in the regulations about breastfeeding, organizers of health care facilities are required to provide information and education about exclusive breastfeeding to mother and family member since her pregnancy.

The reinforcing factors also have an influence on transactional communication. Reinforcing factor consist of public figure attitude, public figure behavior, and regulation. The reinforcing factor is an amplifier for someone to change behavior such as public figure, law, regulation, and decree. Lawrence Green, 1984 in Notoatmodjo (2007) stated that health promotion is any combination of health education and interventions related to economic, political, and organizations designed to ease behavioral and environmental changes for health.

The attitude and behavior of public figures who support exclusive breastfeeding make easier the implementation of transactional communication based on knowledge management. The public figure will be easier to affect the surrounding community. Their attitude and behavior are role model for society. This condition makes easier the midwife to socialize public about the importance of exclusive breastfeeding. Figure support will improve community empowerment in health.

A predisposing factor which consists of knowledge, attitude, socioeconomic and tradition affects on improvement the exclusive breastfeeding. According to the theory of Lawrence Green in Notoatmodjo (2007) states that a person's behavior or public about health is determined by the knowledge, attitude, belief and tradition of the person or people concerned. Knowledge is an essential aspect to determine a person's behavior to realize and decide their behavior. Knowledge is one of the predisposing factors to behavior. Mother's knowledge about breastfeeding is one of the important factors in the success of breastfeeding. Research in Bangkok, Thailand on 221 mothers using questionnaires gave good result but the behavior of providing exclusive breastfeeding was low because there were other influential factor, namely: (1) the mother was busy as career woman; (2) the influence of other people / families who care for babies; (3) the absence of exclusive breastfeeding during antenatal; and (4) the provision of infant formula after childbirth in the hospital or health facility (Li et al. 2003).

The most contributing socioeconomic variable was a mother with incomes below the minimum wage and not providing exclusive breastfeeding. Purnamawati research (2003), there is a relationship between socio-economic and breastfeeding. The result also explains the low socioeconomic will have more chance (4.6 times) to breastfeed than mothers with high socio-economic. However, Yefrida cited by (Purnamawati 2003) said there was no relationship between socioeconomic and breastfeeding practice.

Socio-economic status of the family can affect a family's ability to produce or purchase the food. A mother from a low-income family is mostly less educated and access to health information is more limited than the mother with a high-income family so that their understanding of exclusive breastfeeding is low (Suyatno 2000).

The habit has two aspects, namely knowledge and practice. In fact, the practice is influenced by knowledge. If the traditional knowledge still exists, the practice will be still running. Therefore, the socialization does not only include activities providing new knowledge to the mother. What is more important is to convince the mother that the wrong habit can harm the baby's nutritional and health status (Maas n.d.).

Enabling factor affects to breastfeeding. Enabling factor consists of worker behavior, infrastructure, and worker attitude. The important role of health workers is to protect, promote, and support breastfeeding seen by their involvement in the social aspect. As an individual who has an important role in infant nutrition and health care, health worker have a unique position to influence the organization and function of mother's health services, in before, during, and after pregnancy and childbirth. Knowledge, attitudes, and behavior

of health workers in providing health services is crucial for breastfeeding.

Breastfeeding implementation by postpartum mother, health workers can provide a positive influence by demonstrating attitude to the mother and her family so that they see pregnancy, childbirth, and breastfeeding as an enjoyable experience gained in a friendly and supportive environment (Perinasia 1994).

Place of birth can also give effect to the provision of exclusive breastfeeding in infants because it is the starting point for mothers to choose whether to continue providing exclusive breastfeeding or give a formula given by health workers and non-health prior to her breastmilk come out.

The result of FGD has been agreed with the control of pregnant women to the health center, they will be given personal counseling on exclusive breastfeeding preparation and all aspects associated with exclusive breastfeeding. It is held with starting at trimester and continuing until after giving birth. Inadequate infrastructure such as breastfeeding corner, leaflet, and breastfeeding kit are obstacles for a counselor. It is same as a previous study showing that a breastfeeding counselor with good facilities and equipment has a tendency to have good performance when compared with a breastfeeding counselor that is not supported by complete facilities and equipment (Amirudin 2008).

There is no influence of reinforcing factor to breastfeeding. Reinforcing factor consist of public figure attitude, public figure behavior and regulation. Regulation or policy is a series of concept and principle guide to conduct a certain work. The policy is a guideline for action likely to get the desired result. A policy is a written rule that a formal decision of the organization which are binding and regulates behavior to create a new value system in society. If the policy at health center supports exclusive breastfeeding program, breastfeeding will be easier for six months during implementation. But if there is no policy, despite the knowledge and attitudes of health workers has been good to practice exclusive breastfeeding, it will still be an obstacle.

FGD concluded that health center does not provide or does not impose any infant formula with no excuse. The health center has imposed the rule that the child's birth will do the IMD and followed by exclusive breastfeeding and continued breastfeeding until the child is two years old. There is no effect of this regulation in improving exclusive breastfeeding behavior caused by a misunderstanding of client or mother. Or it could be due to the client merely know about the rules of exclusive breastfeeding. But do not understand the content of the regulation. Therefore, the rule which supports a policy should be socialized for client and society.

Transactional communication improves the mother’s behavior to implement exclusive breastfeeding. Transactional communication model emphasizes sending and receiving messages that continue over time in an episode of communication. Communication is a cooperative process, in which the sender and receiver of the message, the midwife and mother/patient, have a responsibility to the impact and effectiveness of communication (Komala 2009).

Transactional communication assumes that we are continually sending and receiving messages, dealing with verbal and non-verbal elements. In other words, communicant conducts on the negotiation process about the meaning of communication. Transactional communication has been done by the midwife with mother since the pregnancy, giving birth and post-partum. Personal communication aims to improve the knowledge, attitude, and practice of mother in breastfeeding (Rohim 2007).

Breastfeeding counseling is an effective way to enhance exclusive breastfeeding (Qureshi et al. 2011). The availability of breastfeeding counselor in a facility of health services is expected to provide information about the benefit, the way to breastfeeding well, and problem-solving in breastfeeding. Mother gets completely and intensively breastfeeding counseling or get counseling at least 5 visits which are more likely to provide exclusive breastfeeding until six months (Nankunda et al. 2010).

Transactional communications model between midwife and patient is based on knowledge management. It used analysis of measurement model and structural model and then compared with the initial model. The result of the structural model is described on figure 4. Exclusive breastfeeding behavior can

be improved by improving the quality of transactional communication. It also needs to consider predisposing factors, enabling factors and reinforcing factors. The effective transactional communication between midwife and mothers will be able to optimize the behavior of exclusive breastfeeding.

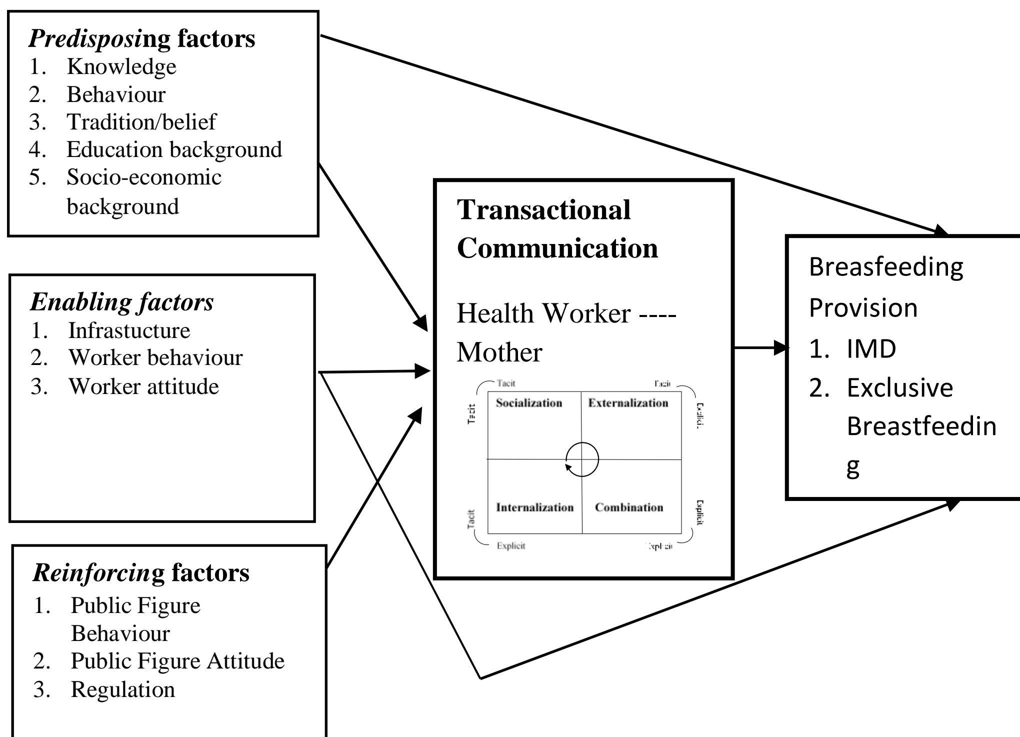

Figure 4. Research Finding of Transactional Communication Model between Midwife and Post-partum in providing exclusive breastfeeding

CONCLUSION

Predisposing factor, enabling factor, the reinforcing factor can improve the process of transactional communication and improve the behavior of mother to give exclusive breastfeeding. Transactional communication between the midwife and the client can improve the behavior of mother in exclusive breastfeeding. *Reinforcing factor* can improve the transactional communication between midwife and client, but can not increase directly to the mother's behavior in exclusive breastfeeding. *Reinforcing factor* will be able to improve the behavior of mother in exclusive breastfeeding if there has been an effective communication between the midwife and client. Transactional communication between the midwife and client has an important role to improve mother's behavior in increasing exclusive breastfeeding provision.

It needs further studies related to mother's behavior in exclusive breastfeeding by testing a model of transactional communication between midwife and client in health improvement, both of mother and baby's health. The midwife needs to improve transactional communication between midwife and client.

REFERENCES

Afifah, D.N., 2007. *Faktor Yang Berperan Dalam Kegagalan Praktik Pemberian ASI Eksklusif (Studi Kualitatif di Kecamatan Tembalang, Kota Semarang*. Universitas Diponegoro Semarang. Available at: http://core.ac.uk/download/pdf/11702480.pdf.

Amirudin, 2008. *Pengaruh Motivasi terhadap Kinerja Konselor ASI Eksklusif di Kabupaten Aceh Barat Propinsi Naggroe Aceh Darussalam*. Universitas Sumatera Utara Medan.

Indonesia, P.R., *Pemberian Air Susu Ibu Eksklusif*, Indonesia.

Komala, L., 2009. *Ilmu Komunikasi: Perspektif, Proses, dan Konteks*, Bandung: Widya Padjajaran.

Li, L., Zhang, M. & Binns, C.W., 2003. Chinese mothers’ knowledge and attitudes about breastfeeding in Perth, Western Australia. *Breastfeeding review : professional publication of the Nursing Mothers’ Association of Australia*, 11(3), pp.13–9. Available at: http://www.ncbi.nlm.nih.gov/pubmed/14768309 [Accessed May 30, 2017].

Maas, L.T., KESEHATAN IBU DAN ANAK : PERSEPSI BUDAYA DAN DAMPAK KESEHATANNYA. Available at: http://library.usu.ac.id/download/fkm/fkm linda2.pdf [Accessed May 30, 2017].

Nankunda, J. et al., 2010. "She would sit with me": mothers’ experiences of individual peer support for exclusive breastfeeding in Uganda. *International Breastfeeding Journal*, 5(1), p.16. Available at: http://www.ncbi.nlm.nih.gov/pubmed/20977715 [Accessed May 30, 2017].

Notoatmodjo, 2007. *Promosi Kesehatan dan Ilmu Perilaku*, Jakarta: Rineka Cipta.

Perinasia, 1994. *Melindungi, Meningkatkan, dan Mendukung Menyusui: Peran Khusus pada Pelayanan Kesehatan Ibu Hamil dan Menyusui* Pernyataan., jakarta.

Purnamawati, S., 2003. FAKTOR-FAKTOR YANG BERHUBUNGAN DENGAN POLA PEMBERIAN ASI PADA BAY1 USIA EMPAT BULAN (Analisis Data Susenas 2001) | Purnamawati | Media Penelitian dan Pengembangan Kesehatan. *Media Litbang Kesehatan*, XIII(3), pp.29–37. Available at: http://ejournal.litbang.depkes.go.id/index.php/MPK/article/view/1055/578 [Accessed May 30, 2017].

Qureshi, A.M. et al., 2011. Using community volunteers to promote exclusive breastfeeding in Sokoto State, Nigeria. *The Pan African medical journal*, 10, p.8. Available at: http://www.ncbi.nlm.nih.gov/pubmed/22187590 [Accessed May 30, 2017].

Rohim, S., 2007. *Teori Komunikasi: Perspektif, Ragam dan Aplikasi*, Jakarta: Rineka Cipta.

Suyatno, 2000. *Pengaruh Pemberian Makanan Pendamping ASI (MP-ASI) Tradisional terhadap kejadian ISPA, Diare, dan Status Gizi Bayi pada 4 (empat) bulan Pertama Kehidupannya*. Universitas Gajah Mada Yogyakarta. Available at: https://core.ac.uk/download/pdf/11716800.pdf.

PSIKONEUROIMUNOLOGY APPROACH TO IMPROVE RECOVERY MOTIVATION, DECREASE CORTISOL AND BLOOD GLUCOSE OF DM TYPE 2 PATIENTS WITH DHIKR THERAPY

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ABSTRACT

Introduction: Blood glucose levels are controlled when the management of diabetes success. Positive perception of the strength of the spiritual aspect will improve the motivation of patients with type 2 diabetes to control it. The purpose of this study was to determine the effect of dhikr based on psychoneuroimmunology (PNI) on blood glucose levels of patients with type 2 diabetes. **Methods**: This study used *quasi-experiment* with *pre-test and post-test control group design*. Samples were taken from the population of patients with type 2 diabetes who were hospitalized in the Internal Medicine Rumkital Dr. Ramelan Surabaya with purposive sampling techniques. Data taken include the general characteristics of respondents, cures motivation, cortisol levels and fasting blood glucose levels. Collecting data using questionnaires and laboratory test, then analyzed using paired t-test and independent t-test, with α value <0.05. **Results**: Statistical test showed that the motivation to recover increased (p = 0.001), cortisol levels fall (p = 0.058) and a drop in blood glucose levels (p = 0.028) after administration of dhikr therapy in patients with diabetes mellitus type 2. There was a significant difference in increased of recovery motivation between patient conduct zikr therapy and patient cared (p = 0,000). **Conclusion**: Dhikr therapy increases the motivation of patients with type 2 diabetes by strengthening awareness and spirituality belief in Allah make positive stress perception. Positive stress perception will affect the stress response and improved regulation of blood glucose through the HPA axis to suppress the secretion of CRH, ACTH, and cortisol.

Keywords: dhikr, diabetes mellitus type 2, recovery motivation, cortisol, blood glucose.

INTRODUCTION

A preliminary study that has been given to 5 patients with type 2 DM being treated in disease room in Navy Hospital of Dr. Ramelan in Surabaya reveals that two patients of them are found to have been doing dhikr every day during treatment period resulting in blood glucose level decreasing from >300 mg/dl when initially admitted to the hospital to < 200 mg/dl in average. Three other remaining patients have never been doing dhikr during the treatment period with blood glucose level of > 200 mg/dl in average. DM patients are aware of DM management principles, yet many of them still have uncontrolled blood glucose level. Several factors found to affect blood glucose level directly include diet, physical activities, and antihyperglycemic drugs. Meanwhile, factors indirectly affecting include cognition, perception, spirituality and motivation (Ariani 2011). Currently, blood glucose level reduction in patients with type 2 DM doing a spiritual activity (dhikr) is yet to explain.

According to data provided by WHO (2010), Indonesia is the fourth country with most people with DM in the world. Research made by DiabCare in Indonesia reveals that 47.2% patients with type 2 DM in Indonesia have poor control to blood glucose level with fasting blood glucose level >130 mg/dl (Soewondo, et al. 2010). Navy hospital of Dr. Ramelan Surabaya has ranked type 2 DM on the second position from top 10 diseases treated with inpatient treatment, which is 951 cases in 2015 (2015 recapitulated data from Navy hospital of Dr. Ramelan Surabaya). Chronic diabetes mellitus and potentially leading to serious complication often result in both financial and psychological problems as well as degrading life quality (Coffey et al. 2002). Patients with DM frequently suffer from several psychological problems including boredom, desperation, frustration and depression (Schumacher & Jacksonville 2005).

Change in lifestyle is a necessity for patients with type 2 DM to maintain their life quality. Many types of research have been conducted about management of patients with type 2 DM with various approaches, including, among others, cognitive approach to lecturing/education, effective approach by teaching compliance with diet control and physical activities, psychomotor approach with

diabetic exercises (Schumacher & Jacksonville 2005; Sousa & Jaclene 2005), unfortunately, those interventions, however, won't be lasting since patients will have boredom, even pessimism (Yuana 2013). Human is a holistic creature that consists of biological, psychological, sociocultural and spiritual dimensions that have interrelationships among those dimensions (Potter & Perry 2009). Imbalance occurring in one dimension will be compensated with the enhancement in another dimension. Psychospiritual aspect plays an equally important role compared to other aspects of maintaining individual health. Self-Determination Theory mentions that individuals intrinsically motivated, which can make a choice of their needs will be able to adapt and treat themselves directly and maintain their health (for example, blood glucose level control and complication prevention) (Adam 2012);(Ariani 2011). One aspect found to be able to improve individual perception to their ability is spirituality aspect (Baldacchino 2008). Spirituality significantly helps patients in adapting to changes caused by various chronic diseases. Spiritual healing technique held with good regularity and continuity may helpfully support conventional therapy. Spiritual healing in Islam refers to the spiritual belief that affects psychological, physical and spiritual aspects (Ibrahim et al. 2011).

Dhikr is one type of spiritual therapy that is easy to do (spoken, recited silently within the mind and through deeds) and affects cognition by improving perception, positive motivation and effective coping (Sholeh 2009). Psychologically, dhikr provides comfortable feeling and spiritually result in closer feeling with Allah (Khan 2009). Positive perception will then induce hypothalamus to secrete hormones that modulate immunity system. The modulation, in turn, results in lowered HPA axis activity leading to lowered cortisol level. Lowered cortisol level affect metabolism that decreases insulin resistance (improving blood glucose uptake into cell and tissue) and prevents glucogenesis. Therefore blood glucose level is controlled (Brown 2012; Putra 2011).

METHOD

This study used quasi-experiment (pre and post test control group design). This research was conducted in Dr. Ramelan Navy Hospital Surabaya after getting ethical clearance from the ethical commission of Dr. Ramelan Navy Hospital. Population were patients with type 2 diabetes mellitus who hospitalized in Rumkital Dr. Ramelan Surabaya in June 2016 (37 patients), samples were patients according to criteria of inclusion and exclusion using purposive sampling technique, there were 19 patients, that divided into two groups, 10 patients in intervention group, and 9 in control group. Independent variable in this study was dhikr therapy. The dependent variable in this study was the recovery motivation, blood glucose and cortisol level of type 2 DM patients. The research instruments include: dhikr therapy was given based on the guidebook, recovery motivation was measured using a questionnaire that combines from Stroke Rehabilitation Motivation Scale (SRMS) and The Ironson-Woods Spirituality Index. There were 30 questions in the questionnaire, fasting blood glucose and cortisol level was measured using laboratory test. The data has been analyzed using paired t-test, Wilcoxon test, and independent t-test.

RESULT

Table 1. Analyze result deferent test (pre-post) recovery motivation, cortisol and blood glucose level in intervention group

	Mean	SD	P-value
Recovery motivation pre-intervention	88,3	5,69	T-test 0,001
Recovery motivation post-intervention	98,6	5,04	
Cortisol level pre-intervention	26,91	8,67	T-test 0,058
Cortisol level post-intervention	19,24	8,25	
Blood glucose level pre-intervention	257,6	69,26	Wilcoxon 0,028
Blood glucose level post-intervention	201,3	47,01	

Table 2. Analyze result deferent test (pre-post) recovery motivation, cortisol and blood glucose level in control group

	Mean	SD	P-value
Recovery motivation pre-intervention	88,3	5,69	T-test 0,001
Recovery motivation post-intervention	98,6	5,04	
Cortisol level pre-intervention	24,87	6,64	Wilcoxon 0,260
Cortisol level post-intervention	25,15	8,11	
Blood glucose level pre-intervention	257,6	69,26	Wilcoxon 0,028
Blood glucose level post-intervention	201,3	47,01	

Table 3. Analyze result different (post-post) delta recovery motivation, delta cortisol level and delta blood glucose level in intervention group and control group

	Mean	SD	P-value
Recovery motivation post-intervention in intervention group	98,6	5,04	T-test 0,000
Recovery motivation post-intervention in control group	86,7	4,06	
Cortisol level post-intervention in intervention group	-7,66	11,16	T-test 0,115
Cortisol level post-intervention in control group	0,28	9,49	
Blood glucose level post-intervention in intervention group	-56,3	69,38	T-test 0,592
Blood glucose level post-intervention in control group	-39,0	68,30	

DISCUSSION

Difference in motivation to recover in patients with type 2 DM between treatment and control groups

Table 3 reveals that difference in motivation to recover in patients with type 2 DM between treatment and control groups after receiving intervention for the period of five days is significantly different. The finding is also clarified by figure 1 showing positive average delta value of patients doing dhikr, while patients in control group showing negative average delta value.

In the concept of PNI, stressor received by an individual will be responded by two responses, including stress perception and stress response. Stress perception comes in the form of the learning process to produce a positive response. When the response is positive, the resulting response will be adaptive. This is in accordance with research by Hardhiyani (2013) stating Islamic spiritual guidance may improve motivation of patient with DM to recover. Prayitno (2015) suggests that prayer and dhikr may be used as a method to lower depression of those with chronic diseases, where lowered motivation is a preliminary sign of depression. Motivation is a process that simply occurs, rather underlined by certain requirement (motive) that drive the motivation. Motivation occurring within oneself is highly affected by his/her perception. Perception is transaction process of judging an object based on individual's previous experience, attitude, expectation, values, and spirituality (Hardhiyani 2013).

Dhikr in this research serving as stressor consists of three types, including jahr, sir and fi'ly. Dhikr of jahr that is spoken will be captured by the organ of hearing passing to the brain through temporal lobe (God spot), which is a tiny nerve able to respond to religious and divine aspects (center of spirituality) and then continued to prefrontal cortex. Dhikr's of jahr and sirr (recited silently within the mind) are then fused in prefrontal cortex in the form of the deliberative learning process through processes of selection, organization and interpretation to a stressor (recitals and meanings of dhikr verses) received that result in positive perception. In order to optimize the learning process in patients with type 2 DM, an emphasis should be given to meanings of each recital of dhikr's, so with the help of cognitive understanding, will help awareness rising from learning wisdom to controlling temper and improving motivation of patients with type 2

DM. The forming of positive perception is then strengthened by dhikr of fi'ly that integrates between mind, feeling and attitude into one single entity to obtain God blessings. Therefore, a perception developed with the improvement of spirituality aspect (dhikr) will affect the psychological reaction, which is motivation to recover and visible behaviors.

Difference in blood glucose level in patients with type 2 DM between treatment and control groups

Table 3 reveals that no significant difference is observed in cortisol level between treatment and control groups. The finding is clarified by figure 2 showing patients doing dhikr have changing negative cortisol level (lowered) in comparison to control groups, despite slight difference.

This is according to research (Satiti 2013) that the dhikr can calm down, reduce stress and depression, as well decrease cortisol levels. (Sholeh 2009) Suggest that tahajud praying therapy by approaching psychoneuroimmunology shows that prayer is humility can increase endurance, reduce the risk of heart disease and increase life expectancy for this therapy can lower cortisol levels. Antoni et al. (2006) mention the emotional and spiritual response were controlled by providing materials and training of remembrance and focus praying in some nurses can decrease cortisol levels than the average nurse 181.14 ng / ml to 88.43 ng / ml.

Dhikr which done with awareness and sense of sincerity including the integration and relationship of body and soul can improve healthy by setting breathing gently, surrender, voiced jahr and sirr, concentration to maintain the balance of the unification of the self, both physically and spiritually to an object that is God (Wilcox 2003). The psychological dynamics through spiritual activities (meditation, remembrance, prayer, prayer) will make a person feel a closeness with God and experience the relaxed state (relaxation), quiet and peaceful (Istiqomah 2011). When remembrance (relaxation) occurs activation response relaxation areas such as the amygdala and hippocampus. Another effect is influenced by the remembrance race molecular signal. Molecules such as nitric oxide, endocannabinoids, endorphin or enkephalin role in the placebo response that causes a feeling of comfort and relaxation as well as have the capacity antagonist to stress. Effects of the relaxation response and the molecular signals that cause repose of the respondents who followed the standard intervention room with reme of the respondents group who followed the standard intervention room with dhikr.

Besides other lines is due dhikr causes relaxation therapy is expected to activate brain structures such as the frontal lobe and limbic areas, indicating the important role of emotions and beliefs, will also improve the immune system and decrease cortisol levels.

In the concept of psychoneuroimmunology, dhikr as a stressor affects the stress perception and stress response that occurs in the body. Stress response occurs through setting nervous and endocrine systems in producing neurotransmitters and hormones that modulate the immune system, one through the HPA axis. Emotions which are controlled in amygdala can affect the hypothalamus in reducing the secretion of CRH, a decline of CRH will be responded by the adrenal to reduce secretion of ACTH, it can decrease cortisol secretion in the adrenal cortex, so that the stabilization of emotional and spiritual states can be observed from the adrenal hormone fluctuation.

Difference in blood glucose level in patients with type 2 DM between treatment and control groups

Table 3 reveals that no significant difference is observed in blood glucose level between treatment and control groups. The finding is clarified by figure 3 showing patients doing dhikr have changing negative blood glucose level (lowered) in comparison to control groups, despite slight difference.

One channel playing a role in regulating blood glucose level is HPA axis through modulated cortisol (Sherwood 2011). Modulated cortisol through dhikr therapy as discussed earlier will affect metabolism process in the body, through the suppression of catalyst enzyme production in the process of glycogenesis in liver (glucose 6-phosphatase enzyme), thus leading to lowered protein decomposition rate to become glucose. Another metabolism effect of the lowered cortisol level in the long term is to increase cellular sensitivity to insulin which is the main

issue patients with type 2 DM (Black & Hawks 2009). (Yanti 2012) Has proved that dhikr therapy for the period of five (5) days (conducted twice a day) has higher effectiveness in reducing blood glucose level in patients with type 2 DM in comparison to Benson relaxation. Research by Sofia (2012) shows that combination of Fluoxetine and Self Surrendering Practices can improve blood glucose level control, inflammation degree and life quality of diabetic patients suffering from depression.

Meanwhile, blood glucose of control group measured after intervention shows reduction as well, yet not significantly different. Reduction observed in blood glucose in control group mostly due to effect of diabetes mellitus medication in the disease room, which is insulin-giving therapy not followed with improvement in perception (proven with lowered motivation to recover), thus lowering blood glucose level not significantly different as with treatment group. This clarifies the importance of providing treatment to patients with type 2 DM starting with improvement in perception about his/her illness condition, therefore leading to higher effectiveness in other therapies involved, in this case including medical therapy (curing) in order to maintain controlled blood glucose.

Diabetes is considered multifactor disease since many factors have influence and to control them, good management is required from various aspects, including, knowledge, understanding, attitude and behavior. Fluctuation in blood glucose of patients with type 2 DM is affected by several factors, including diet, physical activities, physical and emotional stress as well as antidiabetic drugs or insulin (Ariani 2011). Taken those factors into account, one can say that to maintain controlled blood glucose, a synergistic relationship is required to exist between the state of mind affecting body's physiological process and the establishment of positive behavior. Observing those factors, then dhikr of jahr, sirr and fi'ly have an influence on emotional stress controlling factor as an initial response in perception process. It is then visible in patient motivation to recover. In the next stage, it will impact physiological response in the body through neurohormonal regulation in this case HPA axis (cortisol level), while to obtain positive behavior response in the form of compliance in diabetic management (diet, physical exercise) requires longer time with higher intensity (Ariani 2011); (Fishier et al. 2010) In research by Aini et al. (2010), motivation and education given through home visit for the period of one (1) month (once in a week) may improve patient behavior in DM management. Cortisol regulation therefore is one of many factors that affects blood glucose level in patients with type 2 DM.

CONCLUSION

Psychoneuroimmunology approach using dhikr therapy improve blood glucose regulation through increased recovery motivation, decreased cortisol and blood glucose level.

Improve stress perception to repair stress response is needed to increase health quality level. Nurses can improve patient's perception through giving an understanding about the purpose of life (worship God) and instill positive thinking on everything, especially in patients with chronic diseases.

REFERENCES

Adam, L.O.B., 2012. Peran Motivasi Spiritual Agamis terhadap Organizational Citizenship Behavior (OCB) dan Kinerja Dosen (Studi pada Dosen Universitas Haluoleo Kendari). , 10.

Ariani, Y., 2011. HUBUNGAN ANTARA MOTIVASI DENGAN EFIKASI DIRI PASIEN DM TIPE 2 DALAM KONTEKS ASUHAN KEPERAWATAN DI RSUP. H. ADAM MALIK MEDAN.

Baldacchino, D.R., 2008. Teaching on the spiritual dimension in care: The perceived impact on undergraduate nursing students. , Volume 28(Issue 4), pp.501–512.

Black, J.M. & Hawks, J.H., 2009. *Medical-surgical Nursing: Clinical Management for Positive Outcomes* J. M. Black & J. H. Hawks, eds., Saunders/Elsevier.

Brown, T., 2012. *Rapid Review Physiology* 2nd ed., Philadelphia: Mosbay inc an affiliate of Elsevier inc.

Coffey, J.T. et al., 2002. Valuing Health-Related Quality of Life in. , 25(12), pp.38–43.

Fishier, L., Glasgow, R.E. & Strycker, L.A., 2010. Distress and Clinical Depression

With Glycemic Control Among Patients With Type 2 Diabetes. , 33(5), pp.1034–1036.

Ibrahim, N., Desa, A. & TOng, N.K.C., 2011. Illness Perception and Depression in Patients with End-Stage Renal Disease on Chronic Hemodialysis.

Istiqomah, I., 2011. Penurunan Adiksi pada Penyalahgunaan Narkoba yang Melakukan Ddhikr di Ponpes Inabah XIX Surabaya Tahun 2011.

Putra, S.T., 2011. *Psikoneuroimunologi Kedokteran* 2nd ed., Surabaya: Airlangga University Press.

Satiti, N., 2013. *Penurunan Kadar Kortisol dan Perubahan Stress Persepsi pada Pasien Kusta yang mengalami distress dengan menggunakan modifikasi Cognitive Behavioural Stress Management (CBSM)-Dhikr Asmaul Husna di Rumah Sakit Kusta Sumber Glagah Mojokerto*,

Schumacher, E. & Jacksonville, S., 2005. Diabetes Self Management Education: The key to living well diabetes. Available at: http://www.dcmsonline.org/jax-medicine/2005journals/diabetes/diab05j-pt-education.pdf.

Sherwood, L., 2011. *Fisiologi Manusia: Dari Sel ke Sistem* 6th ed., Jakarta: EGC.

Sholeh, M., 2009. *Terapi Shalat Tahajjud: Solusi Praktis Menyembuhkan Berbagai Penyakit*, Jakarta: Hikmah Jakarta.

Sousa, V.D. & Jaclene, Z., 2005. Toward a Theory of Diabetes Self-Care Management. *Journal of Theory Construction and Testing*.

Wilcox, L., 2003. *Ilmu Jiwa Berjumpa Tasawuf: Sebuah Upaya Spiritualitasi Psikologi*, Jakarta: SIS.

Yanti, N., 2012. Perbandingan efektivitas terapi ddhikr dengan relaksasi benson terhadap kadar glukosa darah pasien diabetes mellitus di Sumatera Barat.

Yuana, 2013. *Gambaran Motivasi Pasien DM dalam Menjalankan Program Manajemen Diabetes*, Surabaya: Skripsi, Stikes Hang Tuah.

HEALTH CARE-SEEKING BEHAVIOUR OF COASTAL COMMUNITIES IN BANYUWANGI, INDONESIA: RESULTS OF A CROSS-SECTIONAL SURVEY

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ABSTRACT

Introduction: Improving health care-seeking behaviour of the coastal communities is a pathway to improving their health. This analysis aims to explore the health care-seeking behaviour of coastal communities in Banyuwangi District to recommend room for improvement for health promotion and health service improvement for these communities. **Method:** Data from a cross-sectional survey of metabolic syndrome and mental health conducted in coastal communities in Banyuwangi were used for analysis. Randomly selected participants from a list of members of the Family Welfare Development Group (Pembinaan Kesejahteraan Keluarga/PKK) were asked for an interview at corresponding village offices in Ketapang, Bangsring, Bulu Agung, Grajagan and Kampung Mandar village. Distribution of health care-seeking behaviors was analysed individually and where possible segregated by gender and age. **Results:** More than half of the coastal communities in Banyuwangi District went to health care services to seek health and 7 out of 10 turned to health care services to seek health for their family members. Women more than men turned to health care services when they or their family members fell ill. Private doctors rather than Puskesmas were more popular. Private midwives were the most popular service for antenatal care (ANC) and delivery. Although there was not a clear increase in health care service utilisation over time, we found that contraceptive utilisation increased with time. **Conclusion:** The utilisation of health care services in Banyuwangi needs to be further promoted especially for men's health.

Keywords: health care-seeking behaviour, health care services, maternal health care, coastal communities

INTRODUCTION

As an archipelagic country, Indonesia has a long coastline and abundant marine and coastal resources (Hutomo & Moosa 2005). Under Joko Widodo's government, Indonesia is currently focusing its efforts on developing its marine and coastal resources to build an independent, advanced and strong maritime country (Kementerian Perencanaan Pembangunan Nasional/Badan Perencanaan Pembangunan Nasional 2014). In addition, the government of Indonesia also has a mission to create a high and advanced quality of life for Indonesians (Kementerian Perencanaan Pembangunan Nasional/Badan Perencanaan Pembangunan Nasional 2014). Consequently, development of human resources in the coastal communities is an obvious pathway to take. However, the health of the coastal communities, as one important factor for quality human resources, is yet to be optimally improved.

Understanding health care-seeking behaviour is an important factor in providing for the needs of community (Musoke et al. 2014). Coastal communities in Indonesia are usually poor and have low education (Cahaya 2015). These two factors alone may affect their health care-seeking behaviour in a way that will eventually affect their health. Basic Health Research 2013 reported that only 88.5% of farmers and fishermen access antenatal care service (ANC) and 71.2% went for ANC at least 4 times. It was also reported that 25% of people from these groups of the population give birth without assistance from health professionals (Kementerian Kesehatan RI 2013a).

Banyuwangi, a district located in East Java, has ten coastal subdistricts and 176 km of coastline (Badan Pusat Statistik Kabupaten Banyuwangi 2015). Banyuwangi district government is rapidly developing its tourism industry throughout the region including in coastal areas (Pemerintah Kabupaten Banyuwangi 2011). Banyuwangi government also set improving health and access to healthcare as one of its development strategies (Pemerintah Kabupaten Banyuwangi 2011). Therefore, health care-seeking behaviour is expected to change either through specific targeting of health improvement or the growing economy of the district. However, studies on health care-seeking behaviour of Banyuwangi's coastal communities and the change over time is scarce. This study aims to

explore health care-seeking behaviours of the coastal communities in Banyuwangi to discover room for improvement in health services and health promotion in this area.

METHODS

The analyses used data from a survey of metabolic syndrome and mental health conducted in coastal communities in Banyuwangi in September – November 2016. A permit for the survey was obtained from Banyuwangi's Badan Kesatuan Bangsa dan Politik and Banyuwangi District Health Office. Ethical clearance was approved by the Ethical Committee of the Faculty of Public Health of Universitas Airlangga in Surabaya, Indonesia no 521-KEPK.

The original cross-sectional survey was conducted on 100 women and 51 men randomly selected from members of the family welfare development groups (Pembinaan Kesejahteraan Keluarga/PKK) in five randomly selected villages.

The selected villages were Ketapang in Kalipuro Subdistrict, Bangsring in Wongsorejo Subdistrict, Bulu Agung in Silir Agung Subdistrict, Grajagan in Purwoharjo Subdistrict and Kampung Mandar in Banyuwangi Subdistrict. The respondents were requested to come to their corresponding village office for an interview and health checks. The interview was conducted one on one with trained data collectors after the consent process.

For the analysis of overall health care-seeking behaviour, we included from the dataset men and women of productive age (aged 15–64 years old). For maternal and child health care-seeking behaviour we limited our analysis to women of reproductive age (15–45 years old). Distributions of health care-seeking behaviours were analysed individually and where possible were segregated by gender and age. Descriptive analysis was conducted using Stata 11.

RESULTS

There were 97 women (66.4%) and 49 men (33.6%) in the analysis of overall health care-seeking behaviour. Most respondents were 40–49 years old (43.2%) and the mean age was 44.04 ± 10.21).

Table 2 shows that most respondents reported going to health care services (55.2%) when they fell ill. Slightly more women (58.3%) than men (48.9%) preferred to go to health care services. Men preferred to purchase medicine over the counter when they were sick. For those who went to health care services, most respondents reported they went to private doctors (48.1%), followed by Community Health Centres (Puskesmas) or Auxiliary Community Health Centres (Pustu) (29.1%).

When their family members became sick, most respondents also reported taking their family members to health care services. The proportion of respondents who took their family members to health care services was greater than when they were sick (70.4% vs. 55.2%). More women reported taking their family members to health care services. The top three choices for health services for family members were private doctors (40%), Puskesmas/Pustu (31%) and private midwives (23%). We did not find a clear increase in health care service utilisation with decreasing age.

Women were involved in all decisions regarding their health, including going to health services for a cure or health checks or for purchasing medicine or vitamins (Table 2). Most men reported that their spouse was not involved in the decisions regarding men's health. In fact, only 36,2% of men reported that their spouse alone or together with him made decisions to go to health services when he had fallen ill; 38.6% reported that their spouse was involved in the decisions to go to health service for disease prevention or health checks, and 40.8% reported women's involvement in purchasing medicine for their spouse.

Nearly 70% of women of reproductive age went to a private midwife for ANC for her youngest child. The utilisation of private midwives tended to reduce with time. Village level services such as Posyandu, Polindes or Poskesdes were accessed more by women aged 30–39 years old. For delivery, 67.2% of women chose maternity clinics or health professionals' private practices, followed by hospital birth (23%). Although most women breastfed their children, only 48.4% of women exclusively breastfed their children. However, younger women exclusively breastfed their children (63.6%) compared to older women (54.6% for 30–39 years old and 37.9% for 40–

45 years old), showing an increase in the practice over time (Table 3).

Seventy percent of women reported using contraception currently. There was an apparent increase in trends towards birth control use with time. Younger women used contraception more commonly compared to older women (Figure 1). Most women used injectables (48%) followed by pills (20%) and Intrauterine devices (IUDs) (17%). There was an increasing trend towards the use of pills and implants as more younger women used pills and implants than older women (Figure 2).

We found a similar tendency when we limited our analysis to maternal health care-seeking behaviour amongst women with children under five years old (n=27). In this subset of women, 51.8% went to private midwives for ANC, 51.9% went to maternity clinics or private health professionals followed by 40.7% who went to hospitals for delivery, and 48.2% exclusively breastfed their children. More women currently used contraceptive methods in this subset of women (89%), with birth control injectables and pills remaining the top two favourite contraceptive methods.

Table 1. Health care-seeking behaviour of male and female respondents aged 15–64 years old

Questions and Categories	**Women**		**Men**		**Total**	
	n	**%**	**n**	**%**	**N**	**%**
What do you do when you are sick?						
Nothing	1	1.0	2	4.3	3	2.1
Buy medicine in shops	25	26.0	16	34.0	41	28.7
Buy medicine in pharmacies without prescription	4	4.2	3	6.4	7	4.9
Go to health care services	56	58.3	23	48.9	79	55.2
Other	10	10.4	3	6.4	13	9.09
If you go to health care services which health care services do you go to?						
Community Health Centre (Puskesmas) / Auxiliary Puskesmas	17	30.4	6	26.1	23	29.1
Private midwife	10	17.9	2	8.7	12	15.2
Private nurse	3	5.4	2	8.7	5	6.3
Private doctor	26	46.4	12	52.2	38	48.1
Private hospital	0	0.0	1	4.4	1	1.3
What do you do if a member of your family is sick						
Nothing	1	1.1	0	0.0	1	0.7
Buy medicine in shops	17	17.9	12	25.5	29	20.4
Buy medicine in pharmacies without prescription	3	3.2	3	6.4	6	4.2
Go to health care services	69	72.6	31	66.0	100	70.4
Other	5	5.3	1	2.1	6	4.2
If you take your family members to health services which health care services do you take them to?						
Community Health Centre (Puskesmas) / Auxiliary Puskesmas	21	30.4	10	32.3	31	31.0
Private midwife	17	24.6	6	19.4	23	23.0
Private nurse	1	1.5	3	9.7	4	4.0
Private doctor	30	43.5	10	32.3	40	40.0
Private hospital	0	0.0	2	6.5	2	2.0

Table 2. Women's involvement in household decision-making

Type of Decisions	**Women**		**Men**		**Total**	
	N	%	n	%	N	%
To go to health services when sick						
Women not involved	21	22.3	30	63.8	51	36.2
Women involved	73	77.7	17	36.2	90	63.8
To go to health services for disease prevention or health checks						
Women not involved	12	15.2	27	61.4	39	31.7
Women involved	67	84.8	17	38.6	84	68.3
To purchase pharmaceutical medicine, herbal medicine, or vitamins						
Women not involved	18	19.0	29	59.2	47	32.6
Women involved	77	81.1	20	40.8	97	67.4

Table 3. Maternal and child health care-seeking behaviour for the last pregnancy in women aged 15–45 years old

Type of care	**Age Groups (Years)**							
	<30		**30 - 39**		**40 - 45**		**All Age**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Place for antenatal care								
Village level service (Posyandu, Polindes or Poskesdes)	1	9.1	1	4.6	1	3.5	3	4.8
District level service (Puskesmas atau Pustu)	2	18.2	7	31.8	1	3.5	10	16.1
Hospital, clinics, private doctor or OBGYN	1	9.1	4	18.2	2	6.9	7	11.3
Private midwife	7	63.6	10	45.5	25	86.2	42	67.7
Place of birth								
Hospital	5	50.0	5	22.7	4	13.8	14	23.0
Birth clinic/clinic/private health professional	5	50.0	15	68.2	21	72.4	41	67.2
Puskesmas or Pustu	0	0.0	2	9.1	0	0	2	3.3
Home or other place	0	0.0	0	0	4	13.8	4	6.6
Ever breastmilk								
No	1	9.1	1	4.6	1	3.5	3	4.8
Yes	10	90.9	21	95.5	28	96.6	59	95.2
Exclusive breastfeeding								
No	4	36.4	10	45.5	18	62.1	32	51.6
Yes	7	63.6	12	54.6	11	37.9	30	48.4

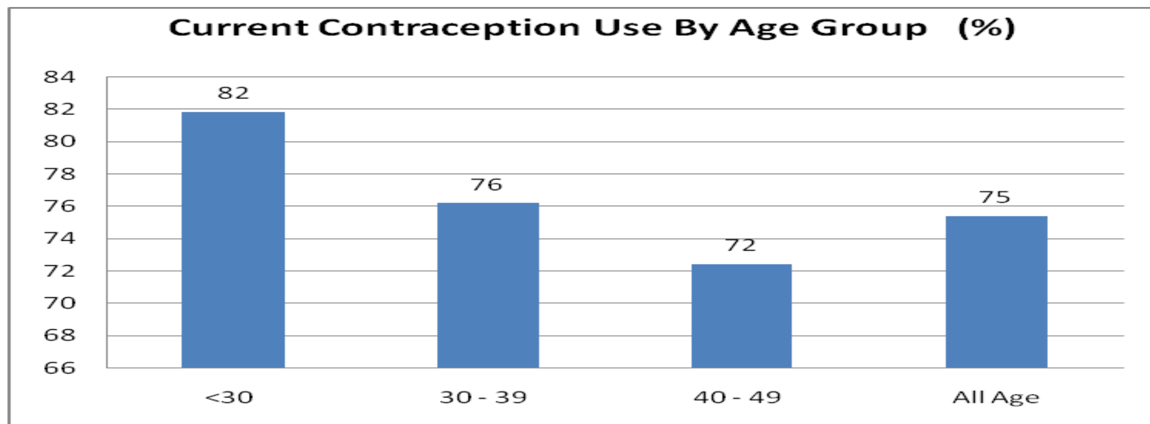

Figure 1. Current Contraception Use Among Women Aged 15–45 Years Old by Age Group

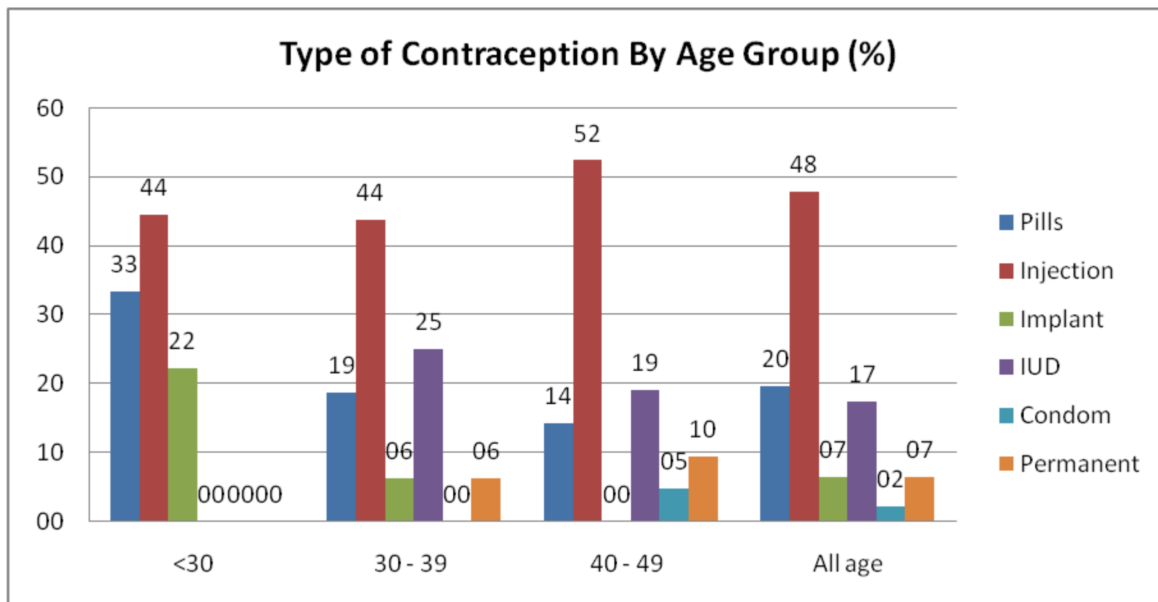

Figure 2. Type of Contraceptive Methods Used by Women Aged 15–45 Years Old by Age Group

DISCUSSION

Our study found that more than half of the coastal communities in Banyuwangi District went to health care services to seek health and 7 out of 10 turned to health care services to seek health for their family members. Women more than men turned to health care services when they or their family members fell ill. Interestingly, they chose to go to private doctors more than Puskesmas. In these communities women took part in household decision-making for their health and men reported that women were less involved in the decision-making for men's health. Private midwives were the most popular service for ANC and delivery.

We found that these coastal communities accessed health care services more than traditional coastal communities such as in South East Sulawesi or East Kalimantan where traditional healers remained the primary providers of health care (Martiyana and Handayani 2015; Nurrachmawati and Anggraeni 2010). More women than men in our study went to seek help from health care services. This fact is also reported for other countries especially for cases of sexually transmitted diseases (Cornell 2013). That men's health care seeking behaviour is lower than that of women for any disease in Indonesian coastal communities is an interesting finding. In fact, a study on gender inequalities in health care-seeking behaviour in Indonesia and globally are rarely conducted (Cornell 2013), and this finding contributes to the knowledge of gender differentials in health care-seeking behaviour. Our study found that most women in our study area (67.2%) gave

birth at maternity clinics or private health professional practices, followed by hospital births (23%). Our findings are similar in trend to the results from Basic Health Research in 2013 in Banyuwangi. The 2013 survey reported that most mothers (76.1%) in Banyuwangi went to maternity clinics or private health professionals to give birth, followed by hospital births (10.7%) (Kementerian Kesehatan RI 2013b). Although similar in trend, compared to the general Banyuwangi population, there is a lower proportion of women who gave birth in maternity clinics, or private practices and more women gave birth in a hospital in our study population. Our estimate was slightly lower for women's involvement in decision-making on their health compared to an estimate for East Java from a national survey that found 82% of women in East Java were involved in decision-making for their health (Statistics Indonesia 2013). Current contraceptive use in our study area was 75% which was higher than the reported current contraceptive use for all Banyuwangi subdistricts (63%) (Kementerian Kesehatan RI 2013b).

The fact that more women went to seek health care services than men may indicate that health care services were more popular for women as they provided more maternal and child care than specific men's health care. Lower access by men to health care services can partly be explained by less involvement of women in the decision-making for men's health. Although we did not find a clear increase in the proportion of health care service utilisation over time, there was an increase in contraception utilisation over time. The fact that private doctors were more popular than Puskesmas can be explained by the fact that we randomly selected respondents from PKK members who usually come from middle-upper socio-economic status.

Studies have shown that availability of health insurance improved formal health facility utilization (Fenny et al. 2015), especially among the low-income groups (Paek et al. 2016). However, despite the availability of national free delivery program (Jampersal) and national health insurance program, access of Puskesmas for birth in these communities has not increased with time. This, however, needs to be further studied as the number of women with children under five years old in this study, that can represent maternal health care-seeking behavior in the last five years, was limited. Although most women accessed institutionalized service for ANC and delivery, the quality of health care services received, however, may not be enough to impact exclusive breastfeeding. This supports the fact that although the trend of exclusive breastfeeding increased, the number was still low at 63.6% for women <30 years old.

The strength of this study was that we randomly selected respondents from five different subdistricts and as such we covered all the major and minor ethnic groups in the coastal areas including Javanese, maduranese, osing and other ethnic groups. Although the sample size was not balanced between men and women, we were able to present segregated analysis of health care-seeking behavior. Our samples were randomly selected from PKK members. Although PKK members usually represent the upper middle class of the communities, we were still able to find that access to health care service in this community was low (55.2%). Another weakness of the study was that the number of PKK members who had under five-year-old children was limited and thus our estimates of maternal and child health care-seeking behavior must be interpreted with caution.

Our study suggests the need for promotions on the utilization of health care service especially Puskesmas in coastal communities of Banyuwangi. There is especially need to focus on improving men's access to health care. In Indonesia and many other developing countries, health care has been promoted more on providing health care for women and children as they are considered to be more vulnerable compared to men. Health promotion with a specific message for improving access to health care utilization among men is very scarce. Brotherhood system in which men become a member of the male group may also be utilized to create peer pressure towards health care service utilization (Grande et al. 2013). The programmatic implication above may be applicable not only to Banyuwangi's coastal communities but also to other coastal communities in Indonesia. However, studies for other coastal communities are needed to assess how culture affect health care seeking differently.

There need to be further studies on gender inequalities in health care for men. Further studies are also needed to assess the

changes in health care-seeking behavior about the utilization of national health insurance scheme in coastal communities. As teen pregnancy in Banyuwangi is still frequent, this study should include factors affecting maternal health care-seeking behavior of adolescent mothers at the individual, interpersonal and family, community and social as well as organizational and health systems level (Shahabuddin et al. 2017).

Our findings also implied the need for promotion of exclusive breastfeeding in these coastal communities. In addition, there also needs to be more studies on the quality of available health care services in these coastal communities. There are 12,827 coastal villages in Indonesia (Badan Pusat Statistik 2015). Health care-seeking behavior in other coastal villages in Indonesia may differ from Banyuwangi. Therefore, more studies need to be done in other coastal villages to help design appropriate health promotion strategies for coastal communities.

CONCLUSION

Slightly half of the community members in the coasts of Banyuwangi accessed health care service for themselves and 7 out of 10 accessed it for their family members. Private midwives were the most popular service for ANC and delivery. The utilization of health care service needs to be more promoted in coastal communities, especially for men's health.

REFERENCES

Badan Pusat Statistik, 2015. Jumlah Desa/Kelurahan Menurut Provinsi dan Letak Geografi, 2003 – 2014.

Cahaya, A., 2015. Fishermen Community in the Coastal Area: A Note from Indonesian Poor Family. *Procedia Economics and Finance*, 26, pp.29–33. Available at: http://linkinghub.elsevier.com/retrieve/pii/S2212567115008011.

Cornell M, 2013. Gender inequality: Bad for men's health. *South Afr J HIV Med*, 14(1), pp.12–14.

Fenny, A.P. et al., 2015. Treatment-seeking Behaviour and Social Health Insurance in Africa: the Case of Ghana under the National Health Insurance Scheme. *Global Journal of Health Science*, 7(1).

Grande, S.W., Sherman, L. & Shaw-Ridley, M., 2013. A Brotherhood Perspective. *American Journal of Men's Health*, 7(6), pp.494–503.

Hutomo, M. & Moosa, M.K., 2005. Indonesian Marine and Coastal Biodiversity: Present Status. *Indian Journal of Marine Sciences*, 34(1), pp.88–97. Available at: http://nopr.niscair.res.in/handle/123456789/1546.

Kementerian Kesehatan RI, 2013a. *Riset Kesehatan Dasar 2013 Dalam Angka*,

Kementerian Kesehatan RI, 2013b. *Riset Kesehatan Dasar Dalam Angka-Riskesdas 2013: Provinsi Jawa Timur*,

Kementerian Perencanaan Pembangunan Nasional/Badan Perencanaan Pembangunan Nasional, 2014. *Rancangan Awal Rencana Pembangunan Jangka Menengah Nasional 2015 – 2019: Buku I -Agenda Pembangunan Nasional*, Jakarta: Kementerian Perencanaan Pembangunan Nasional/Badan Perencanaan Pembangunan Nasional.

Martiyana, C. & Handayani, L., 2016. Health Seeking Behaviour of Non Communicable Disease in Sulaho Village, Lasusua Sub District, North Kolaka Regency. *Buletin Penelitian Sistem Kesehatan*, 18(4), pp.377–386.

Musoke, D. et al., 2014. Health seeking behaviour and challenges in utilising health facilities in Wakiso district, Uganda. *African health sciences*, 14(4), pp.1046–55. Available at: http://www.ncbi.nlm.nih.gov/pubmed/25834516.

Nurrachmawati A and Anggraeni I., 2010. Tradisi Kepercayaan Masyarakat Pesisir Mengenai Kesehatan Ibu di Desa Tanjung Limau Muara Badak Kalimantan Timur Tahun 2008. *Jurnal Kesehatan Reproduksi*, 1(1), pp.42–50.

Paek, S.C., Meemon, N. & Wan, T.T.H., 2016. Thailand's universal coverage scheme and its impact on health-seeking behavior. *SpringerPlus*, 5(1), p.1952.

Pemerintah Kabupaten Banyuwangi, 2011. *Rencana Pembangunan Jangka Menengah Daerah Kabupaten Banyuwangi Tahun 2010 – 2015*, Banyuwangi: Pemerintah Kabupaten Banyuwangi.

Shahabuddin, A. et al., 2017. Exploring Maternal Health Care-Seeking Behavior

of Married Adolescent Girls in Bangladesh: A Social-Ecological Approach U. Simeoni, ed. *PLOS ONE*, 12(1), p.e0169109.

Statistics Indonesia, 2013. Survey Demografi dan Kesehatan Indonesia Indonesia Demographic and Health Survey.

THE ADAPTATION MODEL OF CAREGIVER IN TREATING FAMILY MEMBERS WITH SCHIZOPHRENIA IN KEDIRI EAST JAVA

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ABSTRACT

Introduction: Schizophrenia is a severe mental disorder that is characterized by impaired reality (hallucinations and delusions), inability to communicate, affect unnatural or blunt, cognitive disorders (not capable of abstract thinking) and had difficulty doing daily activities. Normally, the family is most affected by the presence of people with schizophrenia in their families. The purpose of this study was to develop an adaptation model of the caregiver in caring for family members with schizophrenia in Kediri. **Methods**: This study used cross-sectional design with nature explanatory research. Data were collected using a questionnaire on 135 respondents in nine health centers in the city of Kediri region. The sampling technique used simple random sampling. For data analysis and test, the feasibility used a test model of SEM with AMOS program 19. **Results:** The results showed self esteem caregiver (-0.25 <0.05), community resources (0.24 <0.05), self-efficacy (0.22> 0.05) , caregiver coping effort (12:17 <0.05), and the perception of caregiver about the family situation at this time (0:19 <0.05), which means that adaptation of caregiver in treating patients with schizophrenia is influenced by the characteristics of the family, namely community resources, self-efficacy, caregiver coping effort, self-esteem and perception of family caregiver to the conditions experienced at this time. Perception of caregiver about the condition of today's families is affected by stress, which appears on a caregiver stress due to stressor for caring for people with schizophrenia, especially the aggressive behavior of schizophrenics. **Discussion**: Adaptation of caregiver was highly influential in the care of people with schizophrenia because in this case becomes one of the important points to be able to sustain the process of treatment and prevent relapse of schizophrenics.

Keywords: *Schizophrenia, caregiver, adaptation*

INTRODUCTION

Mental Disorder is a condition in which the process of physiological or mental poorly functioning properly so interfere with the functioning of daily life. This disorder is often also referred to as a psychiatric disorder or mental disorders, and the general public is sometimes referred to as a nervous breakdown. Mental disorders experienced by a person can have a variety of symptoms, both obvious and only when they exist in his mind. Starting from the avoidance behavior of the environment, do not want to touch or talk to other people and would not eat until the raging with no apparent reason. Starting from the silent ones to the speaking ones is not clear. Some can talk to and others are not attentive to her surroundings. From the above condition makes the client must be hospitalized to recover her mental condition (Hawari 2009).

Most people with mental disorders have schizophrenia. Schizophrenia is a severe mental disorder that is characterized by impaired reality (hallucinations and delusions), inability to communicate, affect unnatural or blunt, cognitive disorders (not capable of abstract thinking) and had difficulty doing daily activities (Keliat 2006). Schizophrenia is a brain disease that leads to persistent and serious psychotic behavior, concrete thinking, and difficulty in information processing, interpersonal relationships, and solve the problem (Stuart 2013)). Schizophrenia is a form of psychotic disorders (severe mental illness) which is relatively frequent. The lifetime prevalence of nearly 1%, the incidence annually about 10-15 per 100,000 and schizophrenia is a syndrome with a variety of presentations and one variable, the disease course is long term, and often suffer relapses (Davies 2009).

Schizophrenia is the most severe functional psychosis, and pose the greatest personality disorganization; the patient has no reality. The incidence of schizophrenia was 0.1 per million in the world regardless of their socio-cultural status (Varcarolis 2000). 2009 based on data from 33 psychiatric hospitals in Indonesia noted that patients with severe mental disorders reached 2.5 million people (Alert Online 2010). Based on data from 2013 Riskesdas known that the average people with

severe mental disorders in all provinces in Indonesia was 1.7 per million, with the highest prevalence was in DI Yogyakarta and Aceh which is 2.7 per million and for the province of East Java 2.2 per million, and based calculation Riskesdas 2013 in the province of East Java possible economic losses arising from severe mental disorders is based on the loss of productivity of patients and their families who become caregiver is as much as 22.5 billion (Riskesdas, 2013). Kediri City Health Department in 2012 said the number of people with mental disorders in health centers increased. According to the City Health Office Kediri, the increasing rates of up to 15 percent of people with mental disorders in the clinic Kediri. As the research findings, data on the number of people who experience mental disorders has increased approximately 15 percent. The latest data from Kediri City Health Department in 2013 showed the number of people with schizophrenia in the town of Kediri reached 200 people, spread over nine health centers in the city of Kediri.

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From the preliminary study, researchers found that the city of Kediri has nine health centers covering three districts. Of the nine health centers in Kediri have no mental health program in Integrated Health Post (Posyandu). Mental health programs that exist now only to the rehabilitation process in the form of regular checks for the treatment of patients with schizophrenia, but there is no special program for families in their participation in the care of people with schizophrenia after the return from the mental hospital. Results of interviews with 9 Public Health Centers (puskesmas) officers who are responsible for the reporting of mental health in health centers Kediri city, all stated that they had been doing duty in checking the administration of antipsychotic drugs in patients with schizophrenia in the city of Kediri, while for families attendant health centers only provide health education about schizophrenia and drugs must be taken by the patient. Public Health Centers - Puskesmas officers had never been taught to families how to prevent the family could have done relapse of schizophrenic patients using behavior therapy and the implementation strategy in patients with schizophrenia as the primary caregiver of schizophrenics. The result of research interviews with seven families of schizophrenics in the town of Kediri, all stated that they frequently experience anxiety and confusion in caring for a family member who has schizophrenia, especially if the schizophrenic patients had a relapse. In addition to a recurrence of the problem for the family, the financial condition of the family also becomes impaired because of family financial income also decreased due to caregiver who cares for family members of schizophrenics confusion devote time to work for a living by caring for their family members who suffer from schizophrenia. Another problem that arises from the family is confusion families how to care for and how to adapt to families with a schizophrenic who had been suffering from schizophrenia especially the decades and repeatedly experienced a relapse.

People With Schizophrenia handling process (ODS) in length, ranging from hospitalization, administration of drugs, to social support, families, and communities, became a multi-factor for ODS recovery process. Suppose a patient is already getting the drug properly, the process of recovery in the hospital running good, but if the house is not supported by the family and the environment, it could be the patient will relapse. Not given the role at home, then the negative stigma of society will make the ODS recur; therefore the recovery process of this disease takes many years. As a result of the healing process is long, it takes perseverance and patience of families. During this time, many families go into the pit of despair, which ultimately makes ODS stocks. Government data, in Indonesia there are approximately 18 thousand ODS stocks. Many families that include members of the family who ODS to a mental hospital, clinic, foundation treatment of

mental illness, brought to the shaman, a special boarding school madman, or poorhouse (Taufik, 2014).

One with mental disorder schizophrenia causes suffering not only for the individual sufferer but also for people who are closest. Normally the family is most affected by the presence of people with schizophrenia in their families. In addition to the high cost of care, patients also require more attention and support from the community, especially families, in the treatment of mental disorder schizophrenia one of which requires a relatively long time, when patients discontinued treatment will have a relapse (Arif 2008). Once clients go home, the client should perform follow-up care at Public Health Centers - pukesmas in its territory who have mental health programs, and the role of the family is needed in the healing process in the client's home (Yosep 2009).

METHODS

This study uses survey research methods, the research implemented by taking a sample from a population and using questionnaires as the main data collection instrument. The design of this study uses cross-sectional design with the nature of the research studies explanation (explanatory research), based on the perception of respondents, which explains the causal relationships between variables based on the answers of respondents through hypothesis testing. Independent variables consist of family characteristics, stressors, and Community Resources. Intervening variables consist of caregiver perceptions of family members who suffer from schizophrenia, stress on the caregiver, self-efficacy, adversity quotient, caregiver coping effort and caregiver about perception of their current family situation. The dependent variable is the adaptation caregiver in caring for family members with schizophrenia.

The research was conducted on a sample of location research that month from February to June 2015 in the area of Kediri (includes 9 Public Health Centers Puskesmas Kediri). The population in this study is all the families who have family members with schizophrenia post treatment of the Hospital or Psychiatric Hospital in Kediri. The sample in this study is a caregiver who are family members of patients Schizophrenia Kediri to have the inclusion criteria for the Care Giver include: Caregiver lived one house with patients Schizophrenia, a "Care Giver" major, willing to become respondents, domiciled in the City of Kediri, while the family inclusion criteria include: the condition of the family structure is still intact, in one family only one who suffers from schizophrenia. For patients, inclusion criteria include: the schizophrenic ever been treated/be a mental patient / post-discharge.

The samples are taken by the formula Rule Of Thumb. The parameters used in this study amounted to 27 parameters, so the formula Rule Of Thumb obtained sample number: 27 x 5 = 135 respondents. Sampling was simple random. Analytic analysis done using SEM test is by AMOS program 19.

RESULTS

The results showed the majority of patients aged between 26-45 years, with 79 respondents (58.5%). Most of the patients were male, i.e. 88 respondents (65.2). Almost half of the patient's status was a child, namely 47 respondents (34.3%). For the caregiver, the results showed that most of the caregivers aged between 46-65 years are 65 respondents (48.1%). Most of the caregivers are female, i.e. 92 respondents (68.1%). Almost half of the care giver's status is the patient's mother, 49 respondents (36.3%) and educated past high school level, i.e. 58 respondents (43.0%).

Almost all the caregiver has knowledge of the treatment of schizophrenia in the poor category, ie 109 respondents (80.7%). For most of the economic status of the caregiver is the category High (> UMK), i.e. 83 respondents (61.5%). Caregiver portion has some family members of more than four people, namely 69 respondents (51.1%). Caregiver most have high self-esteem, that is 83 respondents (61.5%). Caregiver most have family members who have schizophrenia for more than ten years, namely 58 respondents (43.0%). For the stigma, some caregiver gets a stigma from the society in negative categories, namely 79 respondents (58.5%). The average score of aggressive behavior (48.04) is higher than the score of behavioral withdraw (43.98), it can be concluded that the behavior of patients with

schizophrenia in this study tended to behave in extreme aggression. The partial caregiver has a perception in the negative categories, namely 78 respondents (57.8%). The negative perception here is the interpretation caregiver includes feelings and images in caring for family members who have schizophrenia. Fraction caregiver has a lower stress level category, namely 52 respondents (38.5%). Low stress or light means the state experienced caregiver as a result of environmental changes that threaten, challenge when caring for family members with schizophrenia in conditions of low or mild. The most caregiver gets enough social support categories, namely 77 respondents (57.0%).

The most caregiver has a Collective Efficacy in positive categories, namely 72 respondents (53.3%). Collective Efficacy positive means that the ability of perception of family members and the public on the effectiveness of the relationship between tasks, skills, and role in caring for family members with schizophrenia to produce change towards a positive showing for the caregiver or schizophrenic. Most of the caregiver has a social network in enough categories, namely, 86 respondents (63.7%). Social network means enough communication and cooperation obtained caregiver and family while caring for a family member suffering from schizophrenia enough. It is obtained from the local community as well as from health workers in health centers. Almost all the caregivers have access to new contact and information in enough categories, namely 125 respondents (92.6%).

For most self-efficacy caregiver has a negative self-efficacy, which is 72 respondents (53.3%) and almost all the caregiver has adversity quotient in the category campers, i.e., 124 respondents (91.9%). Adversity Quotient campers' category means the caregiver feel quite satisfied or feel safe with what was achieved at this time in the care of family members who have schizophrenia. No effort or progress further to find other ways of caring for family members who have schizophrenia. The partial caregiver has a perception in the negative category, which is 69 respondents (51.1%).

For coping mechanisms, some caregiver has a coping effort in the category of problem-focused coping, i.e. 76 respondents (56.3%) and partial caregiver own adaptation in the negative categories, namely 70 respondents (51.9%). Adaptability caregiver (caregiver coping effort) negative means caregiver

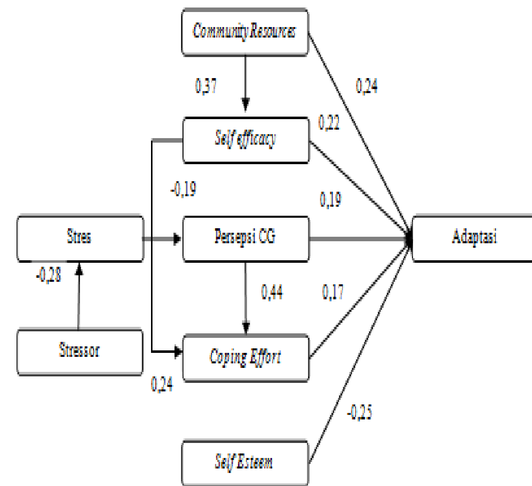

Figure 1. Adaptation Model of caregiver in treating schizophrenic Kediri

cannot adjust themselves well in business and shape their behavior to overcome barriers or problems that arise when caring for family members with schizophrenia.

DISCUSSION

Families of people with schizophrenia feel the stigma and discrimination surrounding environment. Conditions of their schizophrenic in the family will cause various problems, not only the patients themselves but also family particularly caregiver who treats the schizophrenic. One problem that arises is self-esteem disorder in caregiver. Impaired self-esteem or self-worth are disturbed, e.g., low self-esteem. This condition appears one reason is the emergence of stigma on people who think that schizophrenia is a disgrace in the family. It raises the shame of the caregiver, which could eventually create the perception of schizophrenia caregiver becomes less good. Awards and public acceptance of large families affect self-esteem, one caregiver that is part of the family because the family is the first place to interact in someone's life.

One of the signs of disorder such example is the self-esteem of the care giver's unwillingness to interact with others. (Warner R 2007) states that the family's reaction arising

from mental disorder suffered by their family members is to not talk to anyone about the mental disorder for years, sometimes even on their close friends. Ironically, the family is open and discusses the matter is getting abuse from the public. Family responds to these abuses by withdrawing socially, avoiding friends or even moving to a new residence. Although there is a tendency of family members to reject stigma, concealment and withdrawal are based on shame will bring them into social isolation.

The healing process in patients with mental disorders should be done holistically and involve family members. Without it, as well as common illnesses, mental disorders can recur. Family coping very important to participate in the healing process for the family is a major supporter in treating patients. Therefore, nursing care that focuses on the family not only restore the patient but aims to develop and enhance the ability of families to cope with mental health problems in the family (Syaifullah, 2005). The family is the unit closest to the patient and is the "primary caregivers" for patients. Families must have an adaptive coping in overcoming or dealing with people with schizophrenia to determine how or the necessary care of patients at home. The success of the nurses at the hospital will be useless if it is not passed in the house which then lead to patients should be treated back (relapse). The role of the family since the beginning of hospital care will increase the ability of families caring for patients at home so that the possibility of recurrence can be prevented.

The quality of Life a caregiver associated with the female gender is lower than in men (Awadilla, 2005). Data from this study showed that most sex of patients was male and caregivers were mostly women. The condition also can be a stressor itself for caregiver, especially woman as caregiver will usually involve feelings or emotions when the action or make a decision. There is a reciprocal relationship between the behavior of people with schizophrenia are disruptive to the emergence of a negative response to family members caring. The behavior of the sufferer can cause high emotion in the family, and then this condition will lead to negative behavior and lead to psychological stress both for patients and for the family, and psychological stress which appears in the patient can trigger or trigger a relapse. Comments and criticism from family members with high emotional expressions cause the emergence of more thoughts and unusual behavior of the patient and the thoughts and unusual behavior that will trigger an increase in comments and criticisms of the family. In addition it is depression, anxiety; self-confidence is low and less than optimal adaptability accompanied by a lack of adequate information about schizophrenia to be associated with high expression of emotions in the family.Expression of high emotion of the family is one of the significant stressors for people with schizophrenia. Stress that elicits emotional expressions of caregiver will affect the way caregiver in providing care for people with schizophrenia. The more stress caregiver can make the treatment process can not be the maximum, because the caregiver stress can also lead to physical and emotional complaints to the caregiver for example illness, so the ability to provide care to decrease.

The condition of self-efficacy caregiver when treating people with schizophrenia may also be influenced by community resources. The community itself can be divided resources form the two are psychologically in the form of collective efficacy, social and psychological support and none namely social contact and access to new contacts and information. Social caregiver support received in the form of support from the social community for example, from the neighbors, social contact with people, another family as well as with health care. Besides access to search information about schizophrenia and collective efficacy of the public and health workers around are also influential. Patients with schizophrenia and families need information about social situations that support recovery, the resources they can use to improve the quality of life and information about the management of the crisis. Patients with schizophrenia and families also need social support from the wider community (WFMH, 2009; Temes 2011).

The results showed 65 respondents have a negative self-efficacy and the adversity quotient on stage campers. Self-efficacy caregiver formed as a process of adaptation and learning that are in the situation they face when caring for family members who suffer from schizophrenia. The longer caregiver care

for family members who suffer from schizophrenia, the higher self-efficacy owned caregiver in carrying out their duties, but did not rule out the possibility that self-efficacy which is owned by the caregiver actually tends to decrease or remain as it has entered the stage of stagnant or in conditions of adversity quotient on stage campers, where the caregiver was already satisfied with what was achieved or was resigned to her condition during this time. It could be a family experiencing saturation in schizophrenia their care at home, should always control all activities of sufferers, have to face difficulties in the costs of care and treatment of patients in a long time.

The research found empirically that the adaptation caregiver the ability caregiver to adjust in treating patients with schizophrenia is influenced by community resources, self-efficacy, perceptions of caregiver about the condition of the family in caring for people with schizophrenia, coping effort (coping mechanism) and self-esteem or price self. Community resources in this regard include collective efficacy is the belief of society and the family in the care of people with schizophrenia, social support, namely the support obtained by the family of the surrounding community, a social network that is communication and cooperation that can be obtained and carried out by the family as they care for family members schizophrenic and access to new contact that is the ability of families in an effort to find resources to learn about schizophrenia and treatment processes families suffering from schizophrenia. Care giver's perception about the state of today's families is affected by stress, which appears on a caregiver stress due to stressor for caring for people with schizophrenia, especially the aggressive behavior of people with schizophrenia.

Theories about the adaptation of the family in the care of people with schizophrenia did not exist before. The theory that there had existed only said about the adaptation of the family in general in the face of problems or difficulties in the family, one of them when there are family members who experience pain conditions. Previous theories, in general, is the theory ABCX Hills (Rice, 2000) which states that an event (A) interact with family members, will create a crisis (B) and bring up interpretation of the family about the incident (C). What distinguishes the theory of the results of the development of the model here is the adaptation of the family in caring for people with schizophrenia are not only influenced by stress and perceptions of the family but is also influenced by the self-esteem of the caregiver, community resources, caregiver coping effort (coping mechanism) and the perception of caregiver of family conditions experienced at this time.

CONCLUSION

Adaptation of caregiver is the ability to provide welfare care in people with schizophrenia. This is influenced by community resources, self-efficacy, caregiver perception about the family condition in caring for schizophrenia, coping mechanism, and self-esteem or self-esteem. Community resources are the beliefs of people and families in the care of people with schizophrenia, a social support obtained by families from the surrounding communities, social networks of communication and cooperation that can be obtained and carried out by families, and access for families to find resources that support the care of patients with schizophrenia.

The care giver's perception of family circumstances is currently influenced by stress, which is apparent in the stress of caregiver because of the stressors to treat people with schizophrenia, mainly due to the aggressive behavior of schizophrenics.

The model required criteria and parameters of mental health and rehabilitation of standardized, measurable and easy-to-implement mental rehabilitation of schizophrenic patients upon return from hospitalization, enabling maximum families to assist schizophrenic healer recovery, and preventing recurrence, one of which is the establishment of Integrated Health Services. In addition to providing training for Public Health Centers about rehabilitation therapy for people with schizophrenia especially the holder of the mental health program at puskesmas.

REFERENCES

Arif, 2008. *Skizofrenia : Memahami Dinamika Keluarga Pasien.*, Bandung: Refika Aditama.

Davies, J., 2009. *Mental Health & Psychiatric Nursing a Caring Approach*, Boston:

Jones & Bartlett Learning.

Hawari, D., 2009. *Pendekatan Holistik Pada Gangguan Jiwa Edisi 2*, Jakarta: FKUI.

Keliat, B.A., 2006. *Proses Keperawatan Jiwa Edisi 2*, Jakarta: EGC.

Stuart, G.W., 2013. *Psychiatric Of Nursing Edisi 9*, Mosby: USA Elsevier.

Varcarolis, E., 2000. *Psychiatric Nursing Clinical Guide : Assesment Tools & Diagnosis*, Philadelphia: W.B Saunders Company.

Warner R, B., 2007. *Community Attitudes Towards Mental Disorder In Thornicroft, G., Szmukler G (Eds) Textbook of Community Psychiatry 1stedition*, New York: Oxford University Press, Inc.

Yosep, 2009. *Keperawatan Jiwa Edisi Revisi*, Bandung: Refika Aditama.

Murwani, Anita, Setyowati,Sri . (2010). Asuhan Keperawatan Keluarga; Konsep dan Aplikasi Kasus.Yogyakarta: Mitra Cendikia Press

Rice, V. H. (2000). *Handbook of Stress, Coping and Health : Implications For Nursing, Theory and Practice.* SAGE Publication.

Stoltz, Paul G (2006).,*Adversity Quotient. Turning Obtacles to Opportunities.* John Wiley & Sons Inc

Temes R., (2011) ., *Getting Your Life back Together When You Have Schizophrenia.* Oakland : New Harbinger Publications Inc

World Health Organization (2010).*User Empowerment in Mental Health. Copenhagen. World Health Organization Regional Office for Europe.*Diunduhdariwww.euro.who.int/purequest tanggal 12 agustus 2013

COPING MECHANISM OF CAREER WOMEN WITH BREAST CANCER

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ABSTRACT

Introduction: Patients with cancer may experience psychological disorders such as depression, anxiety, anger, helplessness, and unappreciated, so in certain situations require defense mechanisms (coping mechanism) to oppose or resist feelings of anxiety, fear or stress that haunt her. The aim of this study was to know the coping mechanism of career women with breast cancer reviewed by phenomenology in Palembang 2016. **Method:** Type of this study was a qualitative study with a phenomenological approach. Total samples were 8 participants with inclusion criteria: career women, productive age range, health physic and physiologic. Independent variable was a coping mechanism, and the dependent variable was breast cancer. The instrument used the voice recorder, and interview guides. Data analyze used verbatim transcript with credibility, dependability, and confirmability. **Result:** The results showed that working women who have breast cancer have a coping strategy that is adjusted to the psychological condition and physical reactions of the therapy in progress. Psychologically, the coping mechanism is in the form of rejecting, drawing closer to Allah SWT, seeking the opinion of other health workers, discussing conditions with spouse and family, seeking alternative treatment and asking for doctor's direction. The coping mechanism of the body's reaction to therapy is done by taking medicine according to the rules and remember Allah SWT. **Conclusions:** Need the support of the coping mechanism in patients with breast cancer and nursing care approach with the pattern of coping mechanisms with the involvement of the family.

Key Words: Coping Mechanism, Breast Cancer, Career Women

INTRODUCTION

Cancer is the third cause of death globally in 12.5%. This amount exceeds the combined death toll of HIV / AIDS, tuberculosis and malaria. 7 million of deaths caused by cancer (Depkes 2015). At least 1.2 million US residents diagnosed with cancer each year, but the incidence rate is higher in developing countries, including Indonesia (Smeltzer & Bare 2009).

In Indonesia, the prevalence rate of cancer was quite high. In Asean, Indonesia was on second ranks after Vietnam with 135 thousand cases of cancer each year (WHOdalam Kemenkes 2014). The data from Information Health Ministry Center showed the prevalence of cancer was 100 thousand each year (Kemenkes 2014)

Breast cancer was the most experienced by women after cervical cancer and other cancers. Breast cancer was the height cause of death followed by cervical cancer in the second. An estimated 1.2 Million women diagnosed with breast cancer and more than 700thousand died, besides every year seem to be more than 250thousand new cases of breast cancer and ranks first among cancers in women with other cancers (Siswono 2007). In Indonesia, breast cancer was the first ranks cause of death for women followed by cancer of the cervix (cervical) with an incidence of 26 per 10 thousand women (Depkes 2015). Data from (IPKSI 2011) showed that Indonesian women on range 40-45 had cervical cancer each day.

General Hospital of Dr. Mohammad Hoesin Palembang is a Type A hospital and the referral hospital for South Sumatra Province. Based on data from the last visit to patients with cancer was 965 patients covering all types of cancer, especially breast cancer and cervical cancer (RSMH 2015).

Since the last decade of action towards cancer were surgery, radiation, and chemotherapy. The purpose of chemotherapy is healing, control, and palliative used to establish medication used for the aggressiveness of plan therapy (Prawiroharjo 2008). All measures of treatment cause physical changes that indirectly affect psychosocial changes.

Based onSutandyoin (Fachlevy et al. 2013), patients with chemotherapy treatment will experience physical complaints, followed by an emotional setback, social relations disorder, and reduced of communication

between husband and wife. Besides the action of cancer (chemo, radiation, and surgery) will give effect on the esteem, role and body image, identity, sexuality, and the well-being of the patient. Besides of it, the patient will stress with a diagnosis of cancer that was potentially life-threatening. The changes were very burdensome for the patient, because of that, the treatment of patients with cancers should be done multidiscipline formulated comprehensive in science, and provide a variety of support facilities so that patients can adapt to the conditions and the changes.

The possibility of psychological disorders such as depression, anxiety, anger, helplessness, and unappreciated experienced by 23% - 60% of patients with cancers (Lubis & Hasnida 2009). The situation may cause more severe suffering, weaken the function of organs and can be demoralizing to undergo a series of treatment regimens (Duanne & Ellen 2013).

Patients with cancer in certain situations require coping mechanisms to oppose or resist feelings of anxiety, fear or stress that haunt her. One of the Conceptual Model affecting nursing is the Roy Adaptation Model. The main idea of Roy Adaptation Model was a system of human adaptation as a bio-psycho-social. Humans respond holistically to the changes in their environment. Roy considers patient has an adaptability in addressing the problem. Nurses in Roy Adaptation Model were required to assess the adaptability of the patient through the regulator or cognator coping mechanisms and recognize the inability of patients who need help.

In Roy Adaptation Model external and internal environment, Human was a stimulus (stimuli adaptation level) that would provide a response through a mechanism of coping (coping mechanism) in the form of coping regulator and cognator which will give effect (effectors) on physiological function and cognition (psychosocial) include self-concept, function role, and dependence, it will generate (output) whether the patient can adapt to the changes that occur (adaptive) or failure to adapt (ineffective).The nurse's role in facilitating the patient in order to adapt is to optimize the social support that exists around the patient. According to (Sheriden & Radmacher 1992) and (Taylor 1999) divided support into five consists of an instrumental support, informational, emotional, support self-esteem and social support groups.

Based on the above considerations, a qualitative research with descriptive phenomenology method is needed to answer questions about how the response of women career during the experience of cancer; how was the journey of cancer is perceived by women career, how the experiences of women career during therapy and coping mechanisms for women experiencing cancer.

METHOD

This type of this study was a qualitative research with a phenomenological method. This research was conducted in the house participants domiciled in Palembang, November 2016 Instruments used in this study was a voice recorder, interview guidelines, and field notes.

Participants of this study were women career were diagnosed with cancer in Palembang, with purposive sampling technique, which was in qualitative research was often referred to as judgmental, theoretical or purposeful sampling. The total sample in this study were eight participants. Criteria inclusion for participants in this study includes women career, productive age, patients with good physical and mental health condition.

The independent variables in this study were coping mechanism, and the dependent variables in this study were breast cancer. The data analysis methods from a verbatim transcript based on (Colaizzi 1978) in (Fain 1999).

RESULTS

Knowledge of breast cancer

The patient's baseline knowledge of breast cancer chemotherapy was important information for determining the treatment that chosen by the participants. Participants have heard about breast cancer before they undergo treatment. The statements of participants:

"ever, ummm breast cancer was malignant bumps that grow in the breast" (P3).

The knowledge that obtained by participants come from sources that less accurate. Knowledge usually obtained from

friends, family, neighborhood, and online media. The statements of participants:

"I saw on the internet, and searching on Google…" (P2)

The source knowledge that inaccurate can lead to a negative perception. The results of the interview participants describe that breast cancer is a disease that frightening disease. The statements of participants:

"breasts were throbbing, the feels like was shocked, I felt it like between life and death ..." (P5)

Coping mechanism

Coping mechanism carried by patients vary widely starting from the first time the cancer was diagnosed in the face of distress they experienced until it had gone through therapy. The coping strategies include refuse, draw closer to Allah, seek the opinion of other health personnel (second opinion), to discuss the situation experienced by couples/families, looking for a wide variety of alternative treatments, ask for referrals doctor who diagnoses related actions to be carried out.

a. Denial

Denial response occurred in patients in the form of crying, worried thinking about the impact of treatment, embarrassed.

"when doctors explained about my disease, I felt there was wrong..." (P8).
"…sometime when I remembered about my disease, how about the prognosis, sometimes my tears drop, because of the disease…" (P1).
"…afraid, because this disease was death…." (P6)
"…no, I embarrassed, but now is not, this disease was not disgraced…" (P2).

b. Closed to Allah SWT

"Everything has arranged by Allah SWT. I am grateful to Allah to tell in advance to me about my age limit, which may not all people get the information" (P4)

c. Seek the opinion of other health professionals

"…after the doctor said I had cancer, I did not immediately believe what the doctor said, I see a doctor and then another while wondering also with a midwife that I know" (P8).

d. Discuss the conditions experienced towards couples and families

"…The first time that I give to know is my husband. I do not have kids ... I sincere after my husband knows about my disease, he wants to get married again. But my husband did not want (P5).
"This disease, never made me desperate, it seems to want to die... then my children said if I death whit who I will stay?" (P7).

e. Looking for an alternative treatment

"I think if I took chemotherapy, would definitely bother to manage .... family will bother, I should be in the hospital ... while my private employees, if not present, can not be a salary. Although I have insurance, fees for hospital fro more it costs, so ... I wondered alternative" (P1).

f. Request a referral doctor

"…I immediately wrote to follow what the doctor's advice... as already explained everything, stages, and effects…." (P7).
"doctor advised me to chemo, directly yes I follow it... although I heard it was many side effects of chemotherapy, all depended by my body" (P6).

The side effects of treatment

The impact of treatment that experienced by the participants, depending on the type of therapy and therapy stages undergone by participants. Physical side effects are generally perceived in advanced breast patients with cancers who undergo chemotherapy are: nausea, vomiting, anorexia, hair loss, fatigue, bone marrow suppression such as anemia. Psychological side effects feeling trauma therapy. The statements of participants:

"when I came home, my body warm..." (P3)
"emmm how to explain it. I felt my body sick, aches, weakness, and difficult to walk...." (P5)
"always nausea until my appetite loss...." (P7)
"when the sick cam, ouughh I felt that I won't chemo anymore..." (P4)

Coping mechanisms do participants experience a reaction time of therapy done by

taking medicines according to the rules and the remembrance of Allah:

"*to solve it only by that way, drink medicine, and ask to doctor for the same medicine...*" (P5)

"I preferred to istighfar, and surrendered to Allah..." (P6).

Family's support

The entire family of the patient to provide support to patients, tailored to the capabilities of each family, from the moral and material support. From each of the support obtained, a positive impact on participant to continue his life.

"My husband loved me, he always accompanied and fulled my daily needed. My husband told that I couldn't work because of sick, so he will handle to work." (P5).

"my children hug me when I look to take a rest because of sickness, their action that I strength… I must be tough for them" (P7).

Expectations towards family and closest people

Participants express to have hope for the family to be able to help him continue the task of surrogate mother for her children and her husband to get a good wife.

"sometimes… I want surrogate women to take my position as mother and wife"(P8)

The hope of participant

The Hope of participants with this illness that can get through this disease properly. If she should die because of the illness, she wanted to die in the midst of the family.

"I want to heal as normal…" (P5)

"I felt… all effort I have done… if I was gone, I want besides my family" (P2).

DISCUSSION

Based on the results which have been mentioned in the previous section, the individual experiences when first diagnosed with cancer can lead to changes and actual or potential problems in various aspects. Problems that arise can be either physical or psychological aspect. The problems associated with the physical aspects of the disease may be related complaints such as pain, bleeding, sleeplessness, physical discomfort, and limitations in performing daily activities. While issues related to psychological aspects may be the emergence of negative emotions such as shock, sadness, fear, and anger, and also appeared despair even to suicide. There are also issues related to financial and job changes. It is also in line with previous research which states that at the time of the first diagnosis, the patient will have problems with daily living activities, financial problems along with employment problems, in addition to issues related to physical (Pascoe et al. 2004) and then based on (The Royal Marsde Hospital 2014), person with cancer may experience one or more of the following problems: anxiety, the uncertainty about the future, anger, difficulty of adjustment, the problem of family communication, changes in body image, depression, difficulty making decisions, taboo for a balance the demands of the condition of his illness and treatment for a patient.

Various problems experienced by the patient underlying them to find a way out of the problem. To obtain these solutions, patients need the various aspects of support. In this study identified a variety of patient needs related to their efforts in solving the problem. The needs include family support, social environment support, the support of health professionals, disease-related information, a desire to be able to regulate emotion existing instrumental needs, spiritual needs and responsibilities of the role.

The spiritual aspect was the domain that considered the important and a source of strength that was most often mentioned by the subjects in this study. (Gockel et al. 2007) Explained that the spiritual aspect was an important part of the counseling dimension. Then (Gockel et al. 2007) also explained that patients with cancer looked at the spiritual aspect can improve recovery and improve the condition of 7-stage cancer. Stage include: (1) transparency, (2) changing / shifting spiritual perspective, (3) accept the conditions / going within (4) connects to the spirit (5) clarify (6) setting the intention of healing and (7) follow a guide to a restoration of the condition.

Patients coping towards problems that faced by patients with cancers also mentioned.

Coping performed by different patients, but it also evident there was some similarities. Schetter, Feinstein and (Taylor et al. 1997) explained that the coping performed patients with cancer would be different depending on the issue or cancerous conditions are experienced. For example, if the patient had no complaints or physical discomfort, then coping adaptive to the type of coping focused on a problem (problem-focused), while for the problems associated with the ambiguity of the future, coping adaptive coping focused on emotions by regulating emotions such as diverting or avoid negative thinking.

There were two factors that become the main determinant in the coping selection of patients with cancer, there was the cancer situation that experienced, and a factor of patient perception towards stress factors encountered. Thus, the more the situation experienced, the more forms of coping performed by patients with cancer (Taylor et al. 1997). Beside of that, there were several factors that can determine the patient's coping taken as socioeconomic level, gender, age, and religious beliefs (Billing & Moos 1984). Socio-economic levels were associated strongly and consistently against certain coping methods that taken, they tend to choose to cope focused on a problem (problem-focused coping) rather than avoiding everyday problems. In this study, the majority of participants come from socio-economic and low education levels. In this group, they were more likely to accept the condition without digging deeper coping variations that can be taken.

In this study also explained that participants were individuals who live in a family community, which was attached to their roles as wives or partners for a husband and as the mother of the children whose age varies. The role as spouse and mother are also known to impact individual lives of cancer. Spousal support, child, and family can strengthen the patient in dealing with cancerous conditions. Participants many say that the spousal support was very meaningful and give strength to continue to live a life with cancer and its treatment often leaves them tired and painful. (Hagedorn et al. 2008) in their study explained that the spousal could be a key role in helping make decisions about treatment should be performed, providing emotional and instrumental support, in addition to the pair also affect the adjustment of the patient toward cancer. (McClure et al. 2010) Stated that patients with cancer in the early diagnosis, however, will experience depression due to the disease, however, if an individual who has cancer it has a partner who has a positive belief in solving the problem, then that patients with cancers tend to have very low levels of depression. Beside of this, the role of partner to patients with cancers, otherwise patients may also affect the emotional life and also the welfare of his partner. So, the patient and her partner will influence each other in dealing with the impact of cancer on their lives both emotionally and practically everyday activities.

Besides the implications of the spouse, child figure also plays an important role for cancer patients. There were a few participants in the study who had no spouse, they look at the key role in a child and the other support system such as close family or other relationships that are already considered family as a child living in the boarding house boarding house belongs to the patient. Related to the impact on children, cancer conditions can have an impact on the welfare of children. The main factors that cause an impact on children's age and sex of the child (Ohayon & Braun 2010). Potential impact showed psychological distress, anxiety, loneliness, lack of assistance, and guilty, and children tend not to declare his attention directly but to express it through their behaviors cause difficulties in school and problems with friends (Ohayon & Braun 2010)

Furthermore, participants express also that they feel have hope again after hearing the experience of other patients who have same cancer and managed to survive and live a daily life well. Group of patients with the same cancer experience can be a great encouragement to continue to be optimistic on medication for that group to give a real picture of the success of cancer treatment.

Hagedorn, et al (2008) explained that support informal and formal social group was the force that most affect patient adaptation to the diagnosis and treatment of cancer. Informal support from other patients who have the same diseases, family members, and health care team may influence adaptation to the

conditions of his cancer patients, especially in patients with breast cancer.

Informal social support among the same patient have breast cancer influence positively on mobility after mastectomy and may increase perceptions of health and body image, and has been proven to reduce the negative feelings. Then in his research concluded that women who followed a formal group therapy with other cancer patients were found to survive longer than those who do not follow the group therapy session (Van den Borne et al. 1986).

CONCLUSION

There were seven coping strategies that develop in cancer patients newly diagnosed in this study was among others refused, denial, draw closer to Allah, seek the opinion of other health professionals (second opinion), to discuss the situation experienced by couples/ families, looking for various kinds of treatment alternatives, ask for referrals doctor who diagnoses related actions to be carried out. Copying mechanism while the therapy consists of drink medicine as routine and remember of Allah SWT.

Need the support of the coping mechanism in breast cancer patients and nursing care approach with the pattern of coping mechanisms with the involvement of the family.

REFERENCES

Billing, A.G. & Moos, R.H., 1984. Coping Stress and Social Resources Among Adult with Unipolar Depression. *Journal of Personality and Social Psychology*, 46(4), pp.877–891.

Van den Borne, H., Pruyn, J.F. & Van Dan de May, K., 1986. Self Help in Cancer Patients: A Review of Studies on the Effect of Contracts Between Fellow Patients. *Patient Education & Counseling*, 8, pp.367–385.

Colaizzi, P., 1978. *"Psychological Research as a Phenomenologist Views it", in Goulding, Christina, Grounded Theory, Ethnography and phenomenology, Wolverhampton Business School.*, United Kingdom: Wolverhampton university.

Depkes, R., 2015. Estimasi dan Proyeksi HIV/AIDS di Indonesia. Available at: http://pppl.depkes.go.id/_asset/_download/Estimasi & proyeksi HIV AIDS di Indonesia th 2011-2016.pdf [Accessed November 21, 2016].

Duanne, S.P. & Ellen, S.S., 2013. *Theories of Personality* Tenth Edit. A. Jessica, H. Travis, & N. Mary, eds., United States of America\: Jon-David Hague.

Fachlevy, Andi & Faizal, 2013. Faktor Risiko Kanker Ovarium di RSUP Wahidin Sudirohusodo Makasar. *FKM UNHAS*, 3(2).

Fain, J.., 1999. *Nursing Research: Principle and Methods, 6th Editions*, Philadelphia: Lippincott, William & Wilkins.

Gockel, I. et al., 2007. Resection of the Mesopancreas (RMP): A New Surgical Classification of A Known Anatomical Space. *World J Surg Oncol*, 25(5), p.44.

Hagedorn, M. et al., 2008. Distress in Couples Coping with Cancer: A Meta-Analysis and Critical Review of Role and Gender Effects. *Psyco Bull.*, 134(1), pp.1–30.

Hospital, T.R.M., 2014. *Data of Royal Marsden Hospital*, United Kingdom.

IPKSI, 2011. Ikatan Peduli Kanker Serviks Indonesia.

Kemenkes, R., 2014. *Survey Kesehatan Rumah Tangga (SKRT)*, Jakarta: Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan.

Lubis, N.L. & Hasnida, 2009. *Terapi Perilaku Kognitif Pada Pasien Kanker*, Medan: USU: Press.

McClure, K.. et al., 2010. Social Problem Solving and Depression in Couples Coping with Cancer.

Ohayon, I.H. & Braun, M., 2010. Being A Parent and Coping with Cancer: Intervention Development. *Journal of Palliative and Supportive Care*, 9, pp.149–152.

Pascoe, S. et al., 2004. *Measuring and Appraising Capacity in Fisheries: Framework, Analytical Tolls and Data Aggregation.*, USA: FAO Fisheries Circular.

Prawiroharjo, S., 2008. *Ilmu Kebidanan*, Jakarta: Yayasan Bina Pustaka Sarwono Prawirohardjo.

RSMH, 2015. *Data RSUP Mohammad Hoesin Palembang*, Palembang.

Sheriden, C.L. & Radmacher, S.A., 1992.

Health Psycology: Challenging the Biological Model, New York: John Wiley & Sons, Inc.

Siswono, 2007. Kanker Payudara Bisa Dideteksi Sendiri. Available at: http://www.gizi.net/cgi-bin/berita/fullnew.cgi?newsid1010552074,29807. [Accessed January 1, 2016].

Smeltzer, S.C. & Bare, B.G., 2009. *Buku Ajar Keperawatan Medikal Bedah Brunner & Suddarth*, Jakarta: EGC.

Taylor, S.E., 1999. *Health Psychology* 4th ed., Boston: Mc. Graw-Hill. International.

Taylor, S.E., Peplau, L.A. & Sears, D.O., 1997. *Social psycology*, Prentice Hall: New Jersey.

PROLANIS IMPLEMENTATION EFFECTIVE TO CONTROL FASTING BLOOD SUGAR, HbA1c AND TOTAL CHOLESTEROL LEVELS IN PATIENTS WITH TYPE 2 DIABETES

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ABSTRACT

Introduction: Diabetes mellitus (DM) is a global disease endemic and cause of 4.6 million deaths in the world. The Indonesian government and health insurance *[BPJS Kesehatan]* formulate a Chronic Disease Care Program *[Program Pengelolaan Penyakit Kronis (PROLANIS)]* for type 2 diabetes that aims to control the glycemic status and the risk factors of macro and microvascular complications. The purpose of this study was to analyse the correlation between the implementation of *PROLANIS* and fasting blood sugar, HbA1c, and total cholesterol levels in patients diagnosed with type 2 diabetes at Antang and Pampang community health centres, Makassar, Indonesia. **Methods:** This study used a descriptive correlation design with a cross-sectional study approach. Subjects were 40 patients diagnosed with type 2 diabetes who joined *PROLANIS* at PUSKESMAS Antang and Pampang, Makassar, and the sampling technique used was total sampling. The data were analysed using a correlation test to assess the significance *(p)*, the direction (+/-), and the strength of the correlation (*r*). The implementation of *PROLANIS* was measured by using the observation sheets developed based on *BPJS Kesehatan* criteria, while the laboratory checked the fasting blood sugar, HbA1c, and total cholesterol levels. **Results:** The mean of the implementation of *PROLANIS* was 15.05 (SD ± 5.62), while the mean levels of fasting blood sugar, HbA1c, and total cholesterol were as follow: 191.80 mg/dL (SD ± 85.15); 8.4% (SD ± 2.08); and 192.87 mg/dL (SD ± 45.07). Using the Spearman's rho test, the study result showed that there was a significant and negative correlation between the implementation of *PROLANIS* and the levels of fasting blood sugar (p= 0.001; r= -0.724), HbA1c (p= 0.001; r= -0.870), and total cholesterol (p= 0.029; r= -0.35) in patients diagnosed with type 2 diabetes at Puskemas Antang and Pampang, Makassar. **Conclusions:** The optimal implementation of *PROLANIS* is very effective for controlling the levels of fasting blood sugar, HbA1c, and total cholesterol in patients with type 2 diabetes.

Keywords: Fasting Blood Sugar, HbA1c, PROLANIS, Primary Health Centre, Type 2 Diabetes.

INTRODUCTION

Diabetes mellitus (DM) can be defined as a group of metabolic diseases characterised by hyperglycemia resulting from defects in insulin secretion, insulin action or both. Chronic hyperglycemia in diabetes is associated with long-term damage, dysfunction, and failure of various organs, especially the eyes, kidneys, nerves, heart, and blood vessels (Abdel-Rahman 2011). Besides being a metabolic disease, diabetes is also a global disease endemic. The incidence of diabetes globally, it is estimated, will increase from 366 million to 552 million in 2030 and will present itself as a major health challenge that can be shown by the data of global DM (Shaw, Sicre & Zimmet 2010).

If no action is taken, it is estimated the number will rise to 552 million in 2030 and will be the cause of 4.6 million deaths (Federation 2011). In Indonesia, the number of people with diabetes is as many as 292,715 people, or about 1.8% of the total participants in Social Health Insurance (BPJS Kesehatan 2015).

The number of cases of diabetes in the province of South Sulawesi in 2014 (282 patients) consisted of reported DM (207 patients), unreported DM (160 patients) and Dependent DM on insulin (72 patients) (Sul-Sel 2014). Increasing cases of diabetes occurred in Makassar. In 2012, DM was ranked the fifth leading cause of death with 191 deaths (Dinkes Kota Makassar 2012), while in 2013 it rose to fourth with 217 (Dinkes Kota Makassar 2013). Data for DM patients at Puskesmas Antang Makassar, from January to December 2015 showed 725 patients so that the average number of patients with type 2 diabetes per month was estimated at 61 people, while in January and February 2016 there were at least 136 people and the average number of patients per month was 68 people (Rekam Medik Puskesmas Antang Kota Makassar 2016).

Prevention of chronic complications is not only through controlling blood glucose levels itself but needs good diabetic control. Control of diabetes should be done thoroughly, including

blood glucose, HbA1c, lipid (cholesterol Low-Density Lipoprotein (LDL), high-density lipoprotein (HDL), and triglycerides (Semiardji, 2003). Therefore, the development of new strategies to improve diabetes control and its complications would be very helpful (Bianchi, Miccoli, Daniele, Penno & Del Prato 2009). In Indonesia, one of the new strategies developed is the management program of chronic diseases (PROLANIS). PROLANIS was developed by BPJS. The main objective of PROLANIS is to reduce the risk of complications and achieve a better quality of life with the use of cost-effective and rational measures. The PROLANIS program is a system of governance of health services and health education for social health insurance participants who suffer from hypertension and type 2 diabetes mellitus to achieve the optimal quality of life independently (Idris 2014). The implementation of PROLANIS in Indonesia took place in 2010. This program helps chronic disease management with an integrated promotive and preventive action format. One of the chronic diseases handled at this time is type 2 diabetes mellitus (Idris 2014).

The activities of PROLANIS itself consist of a medical consultation for PROLANIS participants: consultation schedules agreed between participants with health facility managers, high-risk educational clubs (PROLANIS Club) which are an activity to improve health knowledge in an effort to restore the disease and prevent a resurgence of the disease and improve the health status of PROLANIS attendees, reminders or activities to motivate participants to make regular visits to health facilities through a consultation schedule reminding them to go to the health facilities manager, and home visits such as service activities of home visits of PROLANIS participants for the provision of information /self health education and the environment for PROLANIS participants and their families (BPJS Kesehatan 2015).

Previous research (Alexander 2012) has confirmed the effectiveness of the PROLANIS program. Nonetheless, a PROLANIS effectiveness evaluation in health centers is still limited. Therefore, this study aimed to analyse the correlation between the implementation of PROLANIS with fasting blood sugar, HbA1c and total cholesterol in patients with type 2 diabetes mellitus in Puskesmas Antang and Pampang Makassar. It can be concluded that PROLANIS is very effective in controlling health status and improving the quality of life of patients with type 2 diabetes mellitus.

Based on the explanation, researchers were interested in analysing the correlation of PROLANIS implementation with fasting blood sugar, HbA1c, and total cholesterol in type 2 diabetes mellitus at Antang and Pampang community health centres Makassar.

METHODS

This study was a quantitative study with a descriptive correlational design, using a cross-sectional study approach for the collection of data. The study was conducted during one month at Antang and Pampang community health centres Makassar. The population in this study was made up entirely of patients with type 2 Diabetes mellitus, male and female who were PROLANIS participants in Makassar, as many as 66 (37 patients in Antang community health centres and 29 patients in Pampang community health centres). Calculation of the number of samples shows 64 people, but the samples obtained in this study were 40 people. 24 patients dropped out due to the complications of coronary heart disease (CHD) and as many as 12 persons were referred to the hospital, five people refused to respond and seven people were never present during the study.

The samples in this study were patients with type 2 diabetes, PROLANIS participants at Antang and Pampang community health centres Makassar who met the inclusion criteria: male or female ≥ 35 years old, suffered no injuries from diabetes and were willing to participate in this study and signed the informed consent. The exclusion criteria: patients with concomitant diseases such as acute renal failure or chronic renal failure, heart failure/cardiac arrhythmia, chronic liver disease/acute lung tumours or other malignancies, gastrointestinal disease, and patients who were not willing to participate in the study.

Data were analysed using univariate and bivariate analysis. For numerical data in the form of respondent characteristics such as age,

diagnosed with type 2 diabetes, the duration of being a participant in PROLANIS, and the research variables, namely, the implementation PROLANIS, fasting blood sugar, HbA1c and total cholesterol levels using the mean and standard deviation (± SD), whereas categorical data such as gender, occupation and education are presented in the form of n (%). Data normality test was done using the Shapiro-Wilk test. Bivariate analysis used the correlative method. If the types of data are numerical data and normally distributed, the Pearson Correlation test was used, whereas when the data type is not normally distributed the Spearman's test was used (Dahlan 2015).

This study has received ethical approval from the Ethical Comission of the Faculty of Medicine Universitas Hassanuddin with number 1048/H4.8.4.5.31/PP36-KOMETIK/2016, in September 20th, 2016.

RESULTS

Out of 40 respondents, most respondents were women (67.5%), did not work or were house wives (65%), had a level of education of junior high school (27.5%), senior high school (25.0 %) and university (27.5%). The average age of respondents was 55.83 years (± SD 8:04), old diagnosed with Type 2 diabetes mellitus is 10.85 years (SD ± 4.63), and the duration average following PROLANIS program that is 17.55 months (SD ± 11.64) (Table 1).

The average score of PROLANIS implementation was 15.05 (SD ± 5.62), fasting blood sugar 191.80 mg/dl (SD ± 85.15), HbA1c was 8.36% (± SD 2:08), and total cholesterol 192.87 mg/dl (SD ± 45.07). This distribution was based on the implementation of PROLANIS, fasting blood sugar, HbA1c and total cholesterol as can be seen in Table 2.

Table 1 Distribution of Individual Characteristics

Variable	Frequency (n = 40)	Percentage (100%)
Age (years) mean (± SD)	55.82	8.04
Gender		
Male	13	32.5
Female	27	67.5
Employment		
Farmers/ Labour	1	2.5
Enterpreanurer	6	15.0
Civil Servant / TNI-Police / Retired	7	17.5
Unemployed/ House Wife	26	65.0
Education		
No School / Not completed primary school	1	2.5
Elementary School	7	17.5
Junior High School	11	27.5
Senior High School	10	25.0
University	11	27.5
Old diagnosed with type 2 diabetes (years) mean (± SD)	10.85	4.63
Duration Following PROLANIS (months) mean (± SD)	17.55	11.64

Table 2. Distribution of respondents by the Implementation of PROLANIS, Fasting Blood Sugar, HbA1c, and Total Cholesterol in Patient with Type 2 Diabetes Mellitus (n = 40)

Variable	Mean	± SD
PROLANIS implementation	15.055	62
Fasting Blood Sugar	191.80	85.15
HbA1c	8.37	2.08
Total Cholesterol	192.87	45.07

Table 3. Relationship of PROLANIS Implementation and Fasting Blood Sugar, HbA1c and Total Cholesterol in Patients with Type 2 Diabetes Mellitus

Variable	Fasting Blood Sugar		HbA1c		Cholesterol	
	r	*p*	*R*	*p*	*R*	*p*
PROLANIS Implementation	-0.72	0,001	-0.87	0.001	-0.35	0,029
Medical Consultation	-0.66	0,001	-0.77	0,001	-0.34	0,031
Activity Group	-0.68	0,001	-0.82	0,001	-0.33	0,037
SMS Gateway	-0.7	0,001	-0.81	0,001	-0.37	0,021
Home Visit	-0.39	0.047	-0:49	0:01	-0:36	0062

Based on the Spearman rho test in Table 3, the data showed that there is a relationship between PROLANIS implementation with fasting blood sugar in patients with type 2 diabetes mellitus at Antang and Pampang community health centres Makassar, with a significance value of (*p*) 0.001 with a negative correlation direction (r = -0724) and the strength of a strong correlation (r2 = 0.52). The correlation between the activity of PROLANIS, namely in terms of medical consultation, group activities, SMS gateway, and home visit with fasting blood sugar also showed a correlation (p = 0.001; 0.001; 0.001; and 0.047) with the negative correlation direction and the strength of strong and moderate correlation (r = - 0.66; -0.68; -0.70; and -0.39). This means that with the maximum implementation of PROLANIS the lower the levels of GDP with diabetes mellitus type 2. This relationship can be seen in Figure 1.

Based on the Spearman rho test in Table 3, the data showed that there is a relationship between the implementation of PROLANIS with HbA1c with a significance value of (*p*) 0.001 with a negative correlation direction (-0.87) and the strength of strong correlation (r2 = 0.76). The correlation between the activity of PROLANIS was namely in terms of medical consultation, group activities, SMS gateway, and home visits with HbA1c also showing a correlation (*p* = 0.001; 0.001; 0.001; and 0:01) with a negative correlation direction and a strength of strong and moderate correlation (r = - 0.77; -0.82; -0.81; and -0.49). This means that with the maximum implementation of PROLANIS the lower the levels of HbA1c with type 2 diabetes mellitus. This correlation can be seen in Figure 2.

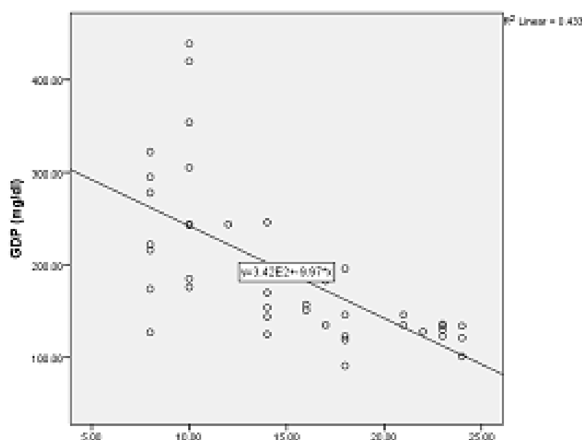

Figure1. Correlationof PROLANIS Implementation and Fasting Blood Sugar

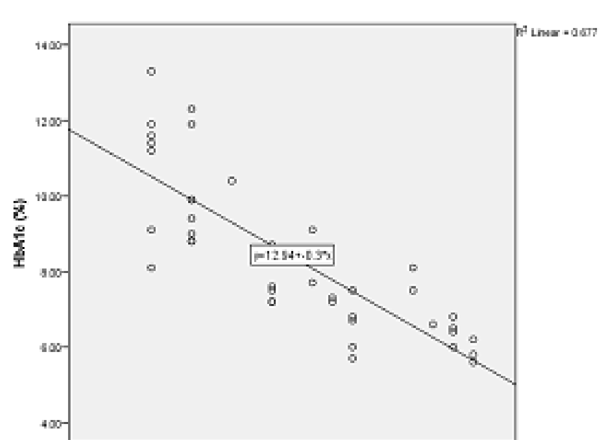

Figure 2. Correlation of PROLANIS Implementation and HbA1c Levels

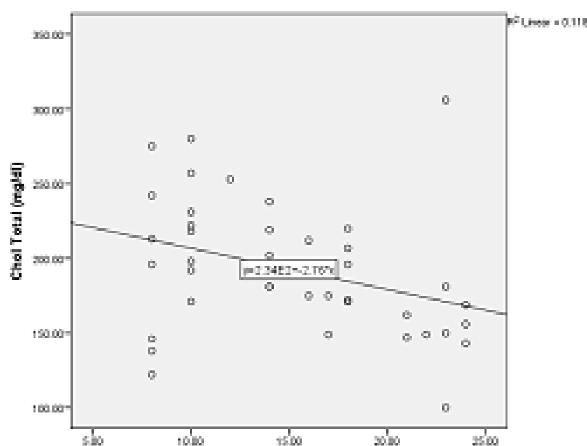

Figure 3. Correlation Implementation PROLANIS and Total

Based on Table 3, the spearman's rho test data showed that there is a relationship between the implementation of PROLANIS with total cholesterol levels with a significance value of (*p*) 0.029 with a negative correlation direction (r = -0.35) and the strength of a weak correlation (r2 = 0:11). The correlation between the activity of PROLANIS was namely in terms of medical consultation, group activities, and SMS gateway with total cholesterol also showing a correlation (p = 0.031; 0.037; and 0.021) with a negative correlation direction and the strength of moderate correlation (r = -0.34; -0.33; and -0.37). However, there is no correlation between a home visit with total cholesterol levels with *p* = 0.062. This means that with the maximum implementation of PROLANIS the lower the total cholesterol with type 2 diabetes mellitus. This correlation can be seen in Figure 3.

DISCUSSION

PROLANIS Implementation is one of the government programs cooperating with BPJS to encourage participants with chronic illness to achieve optimal quality of life so as to prevent complications of the disease (BPJS Kesehatan 2015). PROLANIS activities are carried out at Antang and Pampang community health centres Makassar, held every week on Saturday mornings. According to researcher observations, PROLANIS activity is ongoing and offers routine activities and is strongly supported by the clinic by providing the facilities needed for these activities and often making activities to strengthen kinship between participants and the public health centres such as holiday activities together. The clinic crew was there as a participant in PROLANIS so that it became an example or model for other participants. According to Green, & Kreuter (1999) the habit, model, and the support of the environment, in this case the health care facilities, forms a positive attitude for an individual. The positive behaviour of patients with type 2 diabetes mellitus leads to an awareness of the importance of maintaining a diet, control treatment and regular physical activity, medical consultations and all of that could be obtained if the participants are active in following PROLANIS activities.

In addition, according to the theoretical concepts of precede proceeds say that the individual behaviour is influenced by several predisposing factors, enabling and reinforcing. Predisposing factors reflected in the characteristics of respondents, supporting factors described by the infrastructure support in implementing PROLANIS and reinforcing factors reflected in the attitudes and behaviour of health centre officers who became a model for the implementation of PROLANIS. Good behaviour or lifestyle will both improve an individual's health status (Green & Kreuter, 1999). Health status refers to the control of blood sugar levels and risk factors for complications. This study shows that there is a strong negative correlation between the implementation of PROLANIS and fasting blood sugar in patients with type 2 diabetes mellitus which means that with the maximum implementation of PROLANIS the lower the fasting blood sugar levels of type 2 diabetic patients.

Activity in the implementation of PROLANIS activities includes medical consultations/education, home visits, reminders, club activities and monitoring of health status. Medical consultation exercises undertaken by participants along with health facility managers began with a contract time with medical personnel. Consultation includes a prognosis of disease, complaints about the health problems of participants and drugs control (BPJS Kesehatan 2015). This study shows there is a strong negative correlation between medical

Consultation with fasting blood sugar levels of respondents with a value of $p<0.05$ which means that with the maximum value of the medical consultation exercise the lower the fasting blood sugar in type 2 diabetic patients by Salistyaningsih. Previously Salistyaningsih, Puspitawati & Nugroho (2011) showed a link between adherence in consuming the oral hyperglycemia drug (Obat Hiperglikemi Oral (OHO)) with blood glucose levels in patients with type 2 diabetes mellitus in PuskesmasUmbulharjo II Yogyakarta where patients were wayward in drinking OHO 86 times at a risk od increasing blood sugar levels compared with patients who obeyed.

Hapsari (2014) also examined the treatment of type 2 diabetes Mellitus. Research results indicate a negative and weak correlation with p <0.05d and r = -0064, $r^2 = 0.004$ between compliance in taking the drug with blood sugar levels. This means that the higher value of compliance in taking the drug, the lower the blood sugar level which indicates the success of the therapy. Besides Mona, Bintanah & Astuti (2012) also examined the association of frequency of nutritional consultation with compliance diet and blood sugar levels in people with diabetes mellitus type 2 at the outpatient hospital Tugerejo Semarang which showed a significant correlation between the frequency of nutritional counseling and compliance with diet, and there is a correlation between diet compliance with the patient's blood sugar levels.

Club activity is an activity to improve health knowledge to restore the disease and prevent the return of disease and improve the health status of PROLANIS participants with physical activity (BPJS Kesehatan 2015). Physical activity is held every week on Saturday mornings and health education on diet and type 2 diabetes treatment is carried out two times a month. Based on the results of research conducted there is a strong negative correlation between the activity and the group with a blood sugar value of p = 0.001 and r = -0.68, which means that the higher the value of the implementation of PROLANIS the lower the fasting blood glucose of type 2 diabetic patients.

Other studies conducted by Putri & Isfandiari (2013) which aim to determine whether there is a correlation between the application of the 4 pillars controlling diabetes with the average of blood glucose levels indicate that there is a relationship between absorption education (p = 0.031), diet control (p = 0.002), sport (p = 0.017) and medication adherence (p = 0.003) with the average of blood sugar levels.

Reminders or SMS gateway is an activity to motivate participants to make regular visits to the health facility through a recall schedule (BPJS Kesehatan, 2015). SMS gateway activity at Puskesmas Antang and Pampang Makassar includes recording mobile numbers of participants, enabling a communication network (JARKOM) between participants and health centres, and evaluation of the activity of participants in a communication network and enabling the participants to understand the content given. Hopefully, by the communication network formed, PROLANIS participants with type 2 diabetes are able to access information about the PROLANIS activities to be carried out whether medical consultations, drug taking schedules or group activities that are held every week. Based on the results of the research conducted there is a strong negative correlation between the SMS gateway with fasting blood sugar for type 2 DM patients at Antang and Pampang community health centres Makassar with p = 0.001 and r = -0.68, which means that the higher the value of the implementation of PROLANIS the lower the fasting blood sugar of people with type 2DM.

A home visit is a service activity visitation to the home of PROLANIS participants for the provision of information/self-health education and the environment for PROLANIS participants and their families. Terms of these activities include home visits for patients newly enrolled, patients who were not present at PROLANIS activities for three months in a row, and those who have recently completed in hospitalisation. The results of the home visit are recorded in the book of health monitoring and reported to the clinic and BPJS (BPJS Kesehatan 2015). From the data obtained during the study, the implementation of the home visits conducted at Puskesmas Antanghas have largely been carry out from the 24 patients with type 2 diabetes: 22 participants had received home visits and only two people never got home visits. Of the 22

participants, only three people who get a home visit of new participants registered and been hospitalised because of the deteriorating health and the 19 other participant visitations were to enroll a new patient in PROLANIS. But the problem is that for every home visit, there was no record of activity or actions taken by health officers; information was only presented in the report form such as ever or never visited and dates of visits for the evaluation report.

In contrast to the Puskesmas Antang, PROLANIS participants with type 2 diabetes at Puskesmas Pampang only occasionally get a home visit. Out of 16 patients with type 2 diabetes only five people ever got a home visit and that too was for newly registered participants. The rest (11 participants) never got home visits, and no record of the activities carried out at home visits are available in the patient health monitoring book. This is what underlies the fact that despite the results obtained there is a negative correlation between home visits with fasting blood glucose levels of type 2 diabetes patients in Antang and Pampang community health centres Makassar with p = 0.047, but very weak correlation obtained, namely r = -0.39 and r^2 = 0:15. This means, only 15% of the variation in home visits affects fasting blood glucose levels of type 2 diabetes patients at Antang and Pampang community health centres Makassar.

Hemoglobin HbA1C test results are a highly accurate single examination to assess long-term glycemic status and are useful for all types of DM. This examination is beneficial for patients who need glycemic control. Increased levels of HbA1c> 8% indicate uncontrolled diabetes and risk of long-term complications such as nephropathy, retinopathy, or cardiopathy (Soewondo, 2005). The research data showed that average A1C type 2 DM patients at Puskesmas Antang and Pampang Antang uncontrolled Makassar City are 8.37%. A 1% decrease in HbA1c will reduce complications by 35% (Soewondo, 2005).

This research was also supported by research conducted by Alexander (2012), which aims to analyse the effectiveness of the PROLANIS in order to control the health status of patients with type 2 diabetes mellitus, who found that there are differences in cholesterol reduction, blood pressure systole and diastole, HbA1c, and improved quality of life significantly in the intervention group compared with the control group (p <0.05), but there is no significant difference in BMI reduction between the intervention and control groups, with p> 0.05. Syuadzah (2015) aimed to examine the association between adherence to following the activities of PROLANIS with HbA1c levels in patients with type 2 diabetes mellitus in Surakarta and showed a significant association (p = 0:04). It can be concluded that PROLANIS is very effective in controlling health status and improving the quality of life of patients with diabetes mellitus type 2 (Burns& Grove 2011).

Behaviour that is promoted is awareness of the importance of keeping your diet, medication control and regular physical activity, medical consultations and all that could be obtained if a participant is active in all the activities PROLANIS follows. The research done showed that type 2 diabetes patients at Antang and Pampang community health centres Makassar actively carry PROLANIS with an average value of 15.05 or over half of the total value of a maximum observation sheet which is 25. The activity in PROLANIS implementation includes activities in the medical consultation/education, home visits, reminders, club activities and monitoring of health status. The partners in the medical consultation exercise that led to the consultation activities undertaken by participants along with health facility managers in this case are Antang and Pampang community health centres which began with a contract time with medical personnel. These activities include consultation regarding the prognosis of the disease, consultation regarding other complaints about the health problems of participants and the most important is control of drugs (BPJS Health, 2015)

Based on research done there is strong and negative correlation between medical consultation with HbA1c levels in diabetic patients with type 2 in Antang and Pampang community health centres in Makassar with $p<0.05$ which means that with the maximum value of the implementation of a medical consultation, the lower the HbA1c levels in type 2 diabetic patients. The research was also supported by research conducted by Mona,

Bintanah and Astuti (2012), which aims to examine the relationship between frequency of nutritional consultation with compliance diet and blood sugar levels in people with diabetes mellitus type 2 at an outpatient hospital Tugerejo Semarang, which showed a significant relationship between frequency nutrition consultation with diet adherence and a relationship between diet compliance with patient's blood sugar levels.

Another study about the treatment of diabetes type 2 was also performed by Yoga, Julianti & Pramono (2011), aimed at assessing the relationship between the application of the 4 pillars of control of DM with the successful management of patients with diabetes type 2, where the success of the measure of HbA1c levels of patients indicates that medication adherence regularly provided statistically significant results with $p = 0.05$.

Group activity is an activity of physical activity and health education to improve patients' knowledge to restore the disease and prevent the return of disease and improve the health status of participants PROLANIS (BPJS Health, 2015). Research by testing using Spearmen's rho shows that there is a negative and strong relationship between the activities of the group with blood sugar levels in diabetic patients with type 2 at Antang and Pampang community health centres Makassar with $p = 0.001$ and r -0.68, which means that the higher the value of the implementation of PROLANIS the lower the HbA1c in type 2 DM patients.

Physical activity is held every week on Saturday morning at Antang and Pampang community health centres Makassar implemented in the form of gymnastic fitness for the elderly. The results of research conducted by Yoga, Julianti & Pramod (2011) aimed to assess the correlation between the implementation of the 4 pillars of control of DM with the successful management of patients with diabetes type 2, where the success of the measure of HbA1c levels of patients showed that the regularity of exercise has a significant influence on the success of management of type 2 diabetes with a significant value of p = 0.00; and research by Ramadhanisa, Larasati, & Mayasari (2013) aimed to determine the relationship of physical activity with the HbA1c of people with type 2 diabetes mellitus in dr. H. Abdul Moeloek Bandar Lampung; this showed a significant association between physical activity levels of HbA1c, with p = 0.001. It can be concluded that physical activity is very good for controlling blood sugar levels which can be viewed through an HbA1c.

In addition to physical activity in group activities education about diet and treatment of patients with diabetes type 2 were also included which, according to the results of research conducted by Harum, Larasati, & Zuraida (2013) aimed to show the relationship between high dietary fibre with levels of HbA1c in patients with DM type 2 in a hospital clinical pathology laboratory Dr.Hi.AbdulMoeloek Lampung province using the chi-square method; it showed a significant relationship between a high fibre diet with HbA1c levels (p-value 0.001).

Total cholesterol level is the amount of cholesterol found in the blood which includes LDL, HDL, and TGL. Cholesterol levels are closely linked to fatty deposits in the human body. If in the inside of the body a person has a lot of fat it is likely to cause various diseases such as heart disease and diabetes. For patients with DM, the amount of fat in the body of excess will aggravate the situation and accelerate the onset of complications due to fat being very easily broken down into glucose in the blood due to insulin resistance. Based on the results of research conducted by Ekawati (2012) there is a significant correlation between fasting blood sugar and cholesterol levels of triglycerides in the blood in patients with DM which is not well controlled in Clinical Hospital Jombang.

As is already known, cholesterol is strongly influenced by physical activity and the food intake of a person. According to research conducted by Anam (2010) regular dietary interventions and physical activity or sports as often as 3 times a week for 8 consecutive weeks can lower LDL cholesterol levels in the blood to 13.5 mg/dl and boost levels of HDL to 7.5 mg/dl. Research conducted by Sari (2014) with pre-post design for 6 weeks showed a difference in total cholesterol before and after aerobic exercise (p= 0.009). According to the analysis of the researchers, the underlying average total

cholesterol levels of PROLANIS participants with type 2 diabetes patients at Puskesmas Antang and Pampang Makassar is within the normal range of 192.87 mg/dl because the average length for which these participants have followed PROLANIS activities is less over 18 months or for 72 weeks.

Physical activity and dietary interventions are one of the activities of PROLANIS. PROLANIS group activity is an activity to improve health knowledge to restore the disease and prevent the return of disease and improve the health status of participants of PROLANIS with physical activity (BPJS Health 2015). Physical activity is held every week on Saturday mornings and health education on diet and type 2 diabetes treatment is carried out twice a month. Based on the results of research conducted, there is a negative and weak relationship between activity with total cholesterol levels of Type 2 diabetes patients at Antang and Pampang community health centres Makassar with p = 0.037 and r -0.33, which means that the higher the value of the implementation of PROLANIS the lower the total cholesterol levels in patients with type 2 diabetes.

In addition to group activities, other activities included in the PROLANIS implementation are medical consultations, reminder or SMS gateway and home visits. The medical consultation exercise where the consultation activities are undertaken by participants along with health facility managers in this case are held at the health centres and Pampang Antang which began with a contract time with medical personnel. These activities include consultation regarding the prognosis of the disease, consultation regarding other complaints about the health problems of participants and most importantly the control of drugs (BPJS Health 2015). Physical activity is held every week on Saturday mornings and health education on diet and type 2 diabetes treatment is carried out twice a month. Based on the results of the research conducted there is a negative relationship between activity and weak group with total cholesterol levels of type 2 diabetes patients in primary health centres and Pampang Antang Makassar City with p = 0.037 and r -0.33, which means that the higher the value of the implementation of PROLANIS the lower the total cholesterol levels in patients with type 2 diabetes.

Reminders or SMS gateway are activities to motivate participants to regularly visit the health facility through a recall schedule (BPJS Kesehatan, 2015). SMS gateway activity at Puskesmas Antang and Pampang includes recording mobile numbers of participants, enabling a communication network (JARKOM) between participants and health centres, and evaluation of the activity of participants in JARKOM and enabling participants to understand the content of the communication network used. Hopefully, through the communication network formed, PROLANIS participants with type 2 diabetes are able to access information about the activities to be carried out either through PROLANIS in terms of medical consultation, drug taking schedules and group activities that are held every week. Based on the results of research conducted there is a negative correlation between the weak and SMS gateway with total cholesterol levels of type 2 diabetes patients at Antang and Pampang community health centres Makassar with a value of p = 0.021 and r = -0.37, which means that the higher the value of PROLANIS implementation the lower the total cholesterol levels in patients with type 2 diabetes.

Home visits at Puskesmas Antang and Pampang, based on the previous explanation, have not run optimally. According to the researchers, this is why the assumption based on the Spearman's rho test found that there is no correlation between home visits with total cholesterol levels in patients with type 2 diabetes mellitus at Puskesmas Antang and Pampang Makassar with p = 0.062.

The Fourth PROLANIS activity shows that this event is a program that is highly complex and integrated as it includes activities associated with cholesterol levels in patients with type 2 diabetes. This is what underlies the fact that the Spearman's rho test showed that, although weak, there is still a negative relationship between PROLANIS implementation with total cholesterol levels. The higher the value for implementation of PROLANIS the lower total cholesterol levels in

patients with type 2 diabetes mellitus and at Puskesmas Antang and Pampang Makassar.

CONCLUSIONS

Maximum PROLANIS implementation is very effective in controlling fasting blood sugar levels, HbA1c and total cholesterol in patients with type 2 DM thus indirectly preventing complications. Therefore, it is suggested that PROLANIS should be implemented in each community health centre and primary health centre and comply with the standards set by government health insurance. The evaluation process of PROLANIS focused on the quality of implementation; the results can be seen from the impact and benefits to the target group in terms of the glycemic status of patients with type 2 diabetes in the form of measurable data.

REFERENCES

Abdel-Rahman, Z., 2011. The effects of antioxidants supplementation on haemostatic parameters and lipid profiles in diabetic rats. *Journal of American Science*, 7(3).

Bianchi, C., Miccoli, R., Daniele, G., Penno, G., & Del Prato, S., 2009. Is there evidence that oral hypoglycemic agents reduce cardiovascular morbidity/mortality? yes. *Diabetes Care*, 32(2), pp.342–348.

BPJS Kesehatan, 2015. *Panduan Praktis Prolanis (Program Pengelolaan Penyakit Kronis)*, Jakarta: Badan Penyelenggara Jaminan Sosial Kesehatan.

Burns, N., & Grove, S., 2011. *Understanding Nursing Research, Building and Evidence-Based Practice* 5th ed., USA: Elsevier.

Dahlan, M., 2015. *Statistik untuk Kedokteran dan Kesehatan, Deskriptif, Bivariat, dan Multivariat Dilengkapi Aplikasi Menggunakan SPSS* 6th ed., Jakarta: Epidemologi Indonesia.

Dinkes Kota Makassar, 2013. *Profil Kesehatan Kota Makassar*, Makassar: Dinas Kesehatan Kota Makassar.

Dinkes Kota Makassar, 2012. *ProfilKesehatan Kota Makassar*, Makasar: Dinkes Kota Makasar.

Federation, I.D., 2011. Diabetes Evidence Demands Real Action From The Un Summit On Non-Communicable Diseases. Available at: www.idf.org: www.idf.org/diabetes-evidence-demands-real action-un-summit-non-communicable-diseases [Accessed January 16, 2016].

Green, L.W., & Kreuter, M., 1999. *Health Promotion Planning: An Educational and Ecological Approach* 3, ed., Mountain View, CA: Mayfield Publishing Co.

Hapsari, P., 2014. *Hubungan Antara Kepatuhan Penggunaan Obat dengan Keberhasilan Terapi pada Pasien Diabetes Mellitus di RS X Surakarta*, Surakarta: Fakultas Farmasi Universitas Muhammadiyah Surakarta.

Harum, A., Larasati, & Zuraida, R., 2013. Hubungan Diet Serat Tinggi Dengan Kadar HBA1C Pasien Diabetes mellitus Tipe 2. *Medical Journal of Lampung University*, 2(4).

Idris, F., 2014. Pengintegrasian Program PreventifPenyakit Diabetes mellitus Tipe 2 PT Askes (Persero) ke BPJS Kesehatan. *J Indon Med Assoc*, 64(3), pp.115–121.

Mona, E., Bintanah, S., & Astuti, R., 2012. Hubungan Frekuensi Pemberian Konsultasi Gizi dengan Kepatuhan Diit. *JURNAL GIZI UNIVERSITAS MUHAMMADIYAH SEMARANG*, 1(1).

Putri, N.H., & Isfandiari, M., 2013. HubunganAktivitasFisikdenganKadar HBA1C Pasien. *Medical Journal of Lampung University*, 1(2), pp.234–243.

Ramadhanisa, A., Larasati, & Mayasari, D., 2013. Hubungan Aktivitas Fisik dengan Kadar HBA1C Pasien. *Medical Journal of Lampung University*, 2(4).

Rekam Medik Puskesmas Antang Kota Makassar., 2016. *Laporan Rekam Medik Puskesmas Antang Kota Makassar*, Makasar: Puskesmas Antang.

Salistyaningsih, W., Puspitawati, T., & Nugroho, D., 2011. Hubungan Tingkat Kepatuhan Minum Obat Hipoglikemik Oral dengan Kadar Glukosa Darah pada Pasien Diabetes mellitus Tipe 2. *Berita Kedokteran Masyarakat*, 27(4), pp.215–221.

Sari, A., 2014. *Efektivitas pelaksanaan Program Pengelolaan Penyakit Kronis (Prolanis) dalam penanganan Diabetes mellitus (DM)*

tipe 2 oleh dokter keluarga di Kecamatan Turi Kabupaten Sleman DIY. Universitas Gadjah Mada.

Shaw, J.E., Sicre, R.A., & Zimmet, P., 2010. Diabetes Research and Clinical Practice Global estimates of the prevalence of diabetes for 2010 and 2030. *Diabetes Research and Clinical Practice*, 87, pp.4–14.

Sul-Sel., D.P., 2014. *Profil Kesehatan Pemerintah Provinsi Sul-Sel*, Sulawesi Selatan: Dinkes Pemprov Sul-Sel.

Yoga, A., Julianti, H.P., & Pramono, D., 2011. *Hubungan antara 4 Pengelolaan Diabetes mellitusdengankeberhasilanpengelolaan DM tipe 2*, Semarang: Program Pendidikan Sarjana Kedokteran Umum.

ENCULTURATION IN THE LIFE PATTERN OF BREAST CANCER PATIENTS: AN ETHNO-NURSING STUDY ON SUNDANESE WOMEN

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ABSTRACT

Introduction: Death of breast cancer remains the highest position in the totem of incidents not only in Indonesia but also in the world. Its treatment process, which in fact brings huge impacts to the life quality of breast cancer patients regarding physique, psychology, and social life, shapes some behavioral patterns throughout their life. The aim of this research is thus to explore patterns of breast cancer patients in sustaining their lifespan. **Method:** This research is designed using ethno-nursing qualitative approach. The sampling technique is done purposively to 6 informants, all of whom are breast cancer patients in Garut District, West Java, Indonesia. Data collecting is done through interviews and participatory observation. Data transcription is analyzed using ethno-nursing analysis method. **Results:** The result of the research shows four domains occurring as a pattern of inculturation of breast cancer patients in Sundanese culture, namely 1) dedication as wife and mother of Sundanese breast cancer patients, 2) medicine seeking for the rest of their life, 3) factors affecting to breast cancer patients adaptation for daily routines, and 4) family gathering as a meaning for *end of life*. **Discussion:** The result of this research shows an interconnected cultural pattern in the life of these patients. It is thus advised that nurses provide service to breast cancer clients by applying nursing care inherent to their cultural values.

Keywords: life-pattern, breast cancer, ethno-nursing.

INTRODUCTION

Any diagnosis is a life-changing experience for some people; breast cancer is no exempt. It is considered the road to death by some people in general. This consideration might more or less destabilize life quality of breast cancer clients and their family. Upon being diagnosed with breast cancer, the client must undergo several medical procedures that obviously takes a long time or even for the rest of their life, during which many changes will emerge in their daily routines. The resulting condition of this process brings impacts to their life regarding physique, psychology, and social life. Changes of role, perception, coping mechanism and behavior of seeking healthcare have come to be seen as a response to the meaning of cancer itself. Furthermore, trauma and indeterminacy of breast cancer diagnosis can affect the client's psychological and spiritual prosperity (Lopez-Class et al. 2011).

Some cultures believe that, for women, having breast cancer is a heavy burden to carry. However, the state of ill and healthy is highly relative due to some relevant factors. The term "ill" *per se* contains many different meanings regarding culture, social, and occupation. It is the fundamental aspect in determining illness, for it is a social recognition with which someone can play their normal role as people expect them to. Therefore, many social and cultural factors do affect the life of these clients.

Such social aspects of illness as physique, mental, and medics will shape illness behavior. It is understood, as Lambert & Loiselle (2007) puts it, as ways to which symptoms are responded, evaluated, and played by an individual is subjected to that illness, feels uncomfortable or reads other mal-bodily signs. Having that in mind, she can act out his normal roles partially or entirely. Illness behavior is highly affected by such factors as social classes, ethnics, and cultural differences.

Humans, as we all know, cannot live alone, for they are interdependent to each other, which applies the same way to breast cancer's clients. They have a lot of needs to fulfill and maintain their health and life quality. However, due to their powerlessness, not all of those needs could be fulfilled on their own. This is exactly

why they are exceptionally dependent on their family members and the environment.

The family is the closest part of the life of breast cancer clients. As social theory claims it, it is defined as a group of people unified by marital, blood, or adoptive bond, in which they belong to the same house and place to live, interact and communicate to each other, play their roles as either husband, wife, mom, dad, son, daughter, brother, sister. In other words, families attempt to create and sustain general culture (Khakbazan et al. 2014).

In maintaining life quality, these clients must be able to not only receive holistic care from nurses but also nurse themselves. Leininger (2005) mentions several factors of a social and cultural dimension such as technology, religion, and philosophy, social and intimacy, cultural values, belief, ways of life, laws, and politics, economy and education. All of them affect and are affected by, how someone would be able to nurse herself. All those factors will enable the breast cancer clients to make a decision in undergoing the process of treatment and therapy.

Regarding social life, Garut district of West Java is one of the districts that embrace the Sundanese culture, which grows and lives in Sundanese society. This explains why the majority of Garut people are of Sundanese descent, although recently many ethnics have come to coexist. Sundanese is the mother tongue passed for many generations and thus becomes the main language for communication amongst Garut people. It is also known with politeness culture, enabling their characteristics to be easygoing, amiable (*someah*), smiley (love to smile), and highly respectful of the elderly. The people in West Java or, broadly speaking, *Tatar Sunda*, including Garut, are known as soft-spoken, religious, and spiritual. As the proverb *silih asih, silih asah and silih asuh*, meaning be passionate to yourself (*welas asih*), guide, self-improve, and protect yourself and other people through education and many other fields. In Sundanese culture, religious harmony is maintained by rituals while social harmony by *gotong royong* (mutual cooperation) (Ekadjati 2014).

The familial system in Garut is bilateral, in which the descendant line is drawn from both the father and the mother. Therefore, the right and position of a family member are linear. The meaning of family for Sundanese people is seen as a shelter not only for wife and husband but also between families. A strong familial bond and Islamic teachings do affect the customs of Sundanese ethnic, or more ubiquitously known as *Pancakaki*.

In Sundanese family, the husband holds the position of head of the family responsible for the prosperity of all its members. Meanwhile, the wife has the duty to manage the household and take care of the children. As for widows, the chance of becoming the head of the family is bigger than wives. In Sundanese culture also, particularly in the village areas, there is a tendency for men to make decisions due to his high status in the familial hierarchy. This happens not only inside the family institution but also in the society in general.

Levels of Sundanese familial bond based on generational differences become paramount. Such difference is divided into three compartments, namely (1) the elderly (*sepuh*)—that is, grandfather, grandmother, father, mother, and upper-age generations, (2) siblings (*sadulur*): spouses and stepsiblings, or also known as *lanceuk* if older in age and *adi* or *rayi* if younger, (3) children—that is, the descendants. The elderly (uncle, aunt, *ua*—those younger in age than one's mother or father) in Sundanese are considered as "The Old", even when they have passed away. They still have the right to be involved in a familial discussion. They must be respected, for it is their obligation to guide The Young.

The role of illness for a Sundanese woman pesters herself, especially those who are married and have children. The duty of a wife is that she must fully submit fully to her husband (*dulang tinande*). However, her role as a mother is deity-like, cognizant that her child must respect her because she endured pregnancy and the inevitable pain and struggled to carry (*indung anu ngandung*). The illness, undoubtedly, brings significant impacts to the change of role and social status for breast cancer clients, in their relations to their role as Sundanese women.

The role of nurses as health provider is crucial in resuscitating the society of the danger of breast cancer, as well as advantages from the

actions done to prevent breast cancer itself. In creating plans and implementing those plans, communal nurses must balance cultural values, universal human experiences, and general needs of every person. Having that in mind, they need to understand important cultural aspects of nursing, which will foster community health through skill improvement.

Although the management of breast cancer has rapidly grown, the reality says otherwise. Only a few scientific studies have observed what these breast cancer clients do throughout their life. In the framework of ethno-nursing methodology, the focus of this research is on experiences and daily events of breast cancer clients in maintaining their life quality, as well as their perceptions and meanings of those experiences. Their life patterns, thus, becomes the main focus of this research.

METHOD

In the practice of nursing, the ethnographical approach is more commonly known as ethno-nursing. In other words, the nurses utilize ethnography as the basis of nursing care. Furthermore, such approach enables them to study explicitly nursing phenomena from cross-cultural perspectives.

The method of ethno-nursing research, designed by Leininger, proves helpful to use, knowing that it is a unique and essential qualitative method to study nursing and treatment practice, beliefs, and varying cultural and environmental values. Leininger (2005) also shows that this method is used to understand the meaning of the daily life of those who work in the field of nursing, healthcare, and human prosperity, in a different or similar environmental context.

The number of informants in this qualitative research is previously indeterminable, meaning the sampling might escalate throughout the research. According to Leininger (2005) and Wanchai et al. (2010), when doing a macro ethno-nursing study, 12 to 15 key informants and 24 – 30 general informants have great daily needs to fulfill. On the other one, when doing micro ethno-nursing, the researcher needs 6 – 8 key informants and 12 – 16 general informants. However, the majority of informants cannot be the parameter, for it can lead to skewing perspective and limited reasoning of how the treatment of special phenomena is carried out. Therefore, the aim of this research is to reach the proper number of key, general, and participatory informants, from which the data reaches its vantage point.

In this research, data saturation or no new information is reached at the 6th informant, meaning the number of the informants for this research is limited to 6 people only. Meanwhile, participatory informants include family (2 husbands as two key informants, one child as a key informant, as well as one friend as a key informant).

Research Instruments

Interview

The guideline for interviews focuses on the mundane life of breast cancer clients. This is done by trying to understand daily phenomena in the effort of maintaining their life quality. The open-ended interview is applied and probes are used and prepared by the researcher. Main data are obtained based on probing question used in the interview, during which researcher gives zero limits to clients' responses. However, supposing the informants digress in their answers, the researcher will lead them back to the main discussion. The theme of the interview includes informant's life experience from their diagnosis to their attempts to maintain their life quality. This is done in between informant's activities, as far as the researcher observes.

Participatory Observation

This research uses three observatory steps, as Leininger would put it, namely observation, participation, and reflection. The observation is done on daily activities of breast cancer patients in maintaining their life quality. Its goal is to observe behaviors and interactions among individuals of those groups in their social life. The behaviors include acts demonstrated both verbally and nonverbally.

Documentary Study

This study provides information regarding unobtainable information from (in) direct interviews. It hugely concerns both written and unwritten documents. While the former includes breast cancer client's medical records, therapy,

and treatment, the latter includes photos taken by researcher during observation. However, not all informant's activities are documented through pictures due to some ethical reasons. One of the results is an unabridged medical record of each informant. By using medical record, it is easier for researcher to identify at which stage of cancer. Besides, it helps identify kinds of therapy and treatment that these informants have done or are doing.

Tape Recorder

The tape recorder is used as one of data-collecting equipment. Some information to be recorded are impressions of experience, thought, and feeling as contemplated by these informants. It is only used during the first interview only.

Field Note

Much of this research applies field note as data-collecting equipment. It is used throughout the interview and during observation to some informant's activities.

Researcher as Instrument

The researcher attempts to fulfill his competence as a researcher in digging out the informants' experiences. For some observatory activities, researcher mingles with the patients. This includes cooking, taking part in *posyandu* (maternal and child health center) activities as well as in therapy and treatment activities.

Data Analysis

This research is done by involving detailed description about the setting or individual with breast cancer, followed by data analysis through 4 steps according to Leininger (2005), as drawn in Diagram 1.

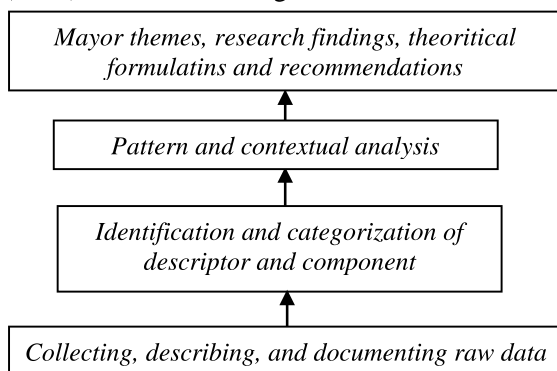

Diagram 1. Research data analysis (Leininger, 2005)

Research Ethics

This research is done with permission from Ethical Committee of Medicine Faculty Universitas Padjadjaran.

RESULTS

Based on the result there are four domains: 1) dedication as a wife and mother from Sundanese woman with breast cancer, 2) medicine discovery throughout the life of Sundanese woman with breast cancer, 3) factors affecting adaptation patterns of breast cancer clients in their routine and 4) gathering with family as the meaning before their life ends. The resulting category and domain will be discussed separately to reveal the meaning of breast cancer patient's life. However, those categories are interdependent in construing and describing the meaning of life in maintaining their life quality in this research. The schematic elaboration on research results of life pattern of breast cancer clients in maintaining their life quality based on a transcription of interview data and participatory observation shown in diagram 2.

DISCUSSION

Living life as breast cancer clients is not an easy thing. Naturally, someone will have to adjust to harmonize her life based on the culture she believes in. However, the behavior could only be done by studying and learning it as a culture of life. Koentjaraningrat (2009) states that humans could walk because of his fundamental nature to walk, and it happens as is. On the other hand, walking like a soldier or a model could only be learned using brain. Thus, it is called "culture" defined by all thoughts and actions functionally and non-functionally determined by the society.

The illness in life will bring about different response and meaning to each individual. Transcription of the interview and participatory observation describe that illness is seen as the life cycle of breast cancer patients. The awareness of life passage is based on the role she has to play, which is a woman. For a particular culture, being a woman means carrying a huge responsibility in their life, enabling her to view illness not as a problem but a cycle to undergo.

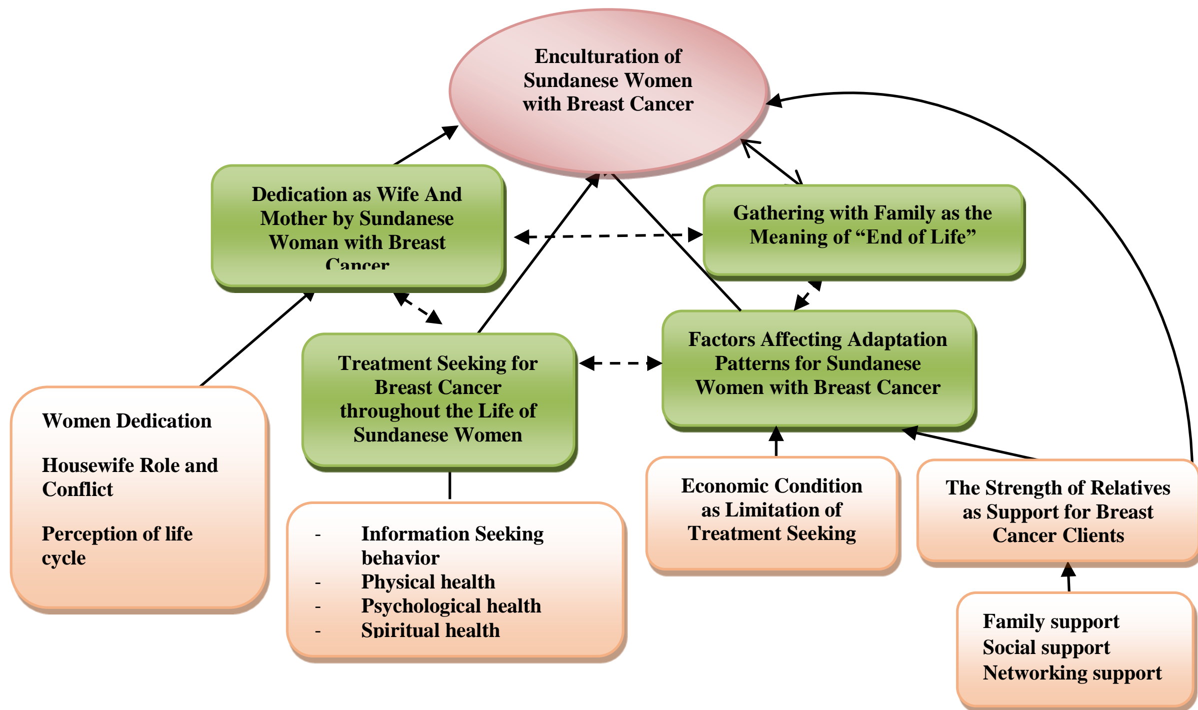

Diagram 2. Life Pattern of Breast Cancer Patients

Saefullah (2008) claims that, in Sundanese culture, different views on Sundanese women are affected by traditional values growing in Sundanese culture and Islamic teachings, which are the most adhered to religions in Sunda. Thus, a role of a woman is highly respected and holds a high position in life, as the proverb says it: *indung tunggul rahayu bapa tangkal darajat* (safety, happiness, and prosperity lie on mother's and father's prayers), which goes to the next expression: *indung anu ngandung bapa anu ngayuga* (there will be no child without the affection of mother and father). Those expressions explain the importance of women's role to their children and husband.

The view of illness and death as illness becomes a pattern drawn in breast cancer clients. Thus, many attempts are made to overcome those adversities. The life pattern to endure by breast cancer clients is different from many people, which encourages them to try many things to balance life with culture. Helman (2007) describes the proposition of illness as follows: (1) not all social or cultural groups respond to illness with the same way, (2) the way people see and respond to their illness, whether it is on their own or others, could be affected by their cultural background, (3) the way and the kind of communication of their illness for health professionals and other people, are also affected by cultural factor.

The interval between healthy and ill undergone by breast cancer clients need treatment and therapy attempt to prosper their life quality. It is learned, understood, and applied in their life, to map out as a form of "inculturation." Koentjaraningrat (2009) claims that the process of inculturation is a learning process and adapting to mind, behavior, and custom, norm systems, and all existing laws related to a particular culture. Much of the same way with what Sadono (2016) has to say: inculturation has two meanings. The first refers to the attempt of inculcating a value, behavior, feeling, view, or knowledge growing and developing in society to the members. The second refers to value aspects, norms, and behaviors under the consent of any living member of a community, which controls and

directs the behaviors with specific objectives. Thus, inculturation might as well be called as "culturing."

Seeking behavior is a behavior constantly done by breast cancer clients throughout their life. Rankin (2011) demonstrates that, after the client being diagnosed, the family's first attempt is seek information regarding treatment of cancer. He goes on to say that problem solving and positive assessment is also positive and significant predictors from family's tendency to seek social support as caregivers.

In line with that, Jenkins et al. (2001) also claim that most patients want as much information as they could obtain about treatment and their illness. A very important finding from their research is that 98% of patients feel that they need to know what cancer is and 95% want to know the probability of their recovery. Therefore, information on prognosis does not need avoiding.

The awareness of cancer among the people and treatment system from doctor or alternatives are paramount. Thus, the information regarding diagnostic and treatment is a dire necessity (Pati et al. 2013). The individual will actively look for information on treatment and therapy (Case et al. 2005). This is linear with Balneaves et.al. (2007) in their qualitative research, claim that aftershock, anxiety, and fear of knowing their diagnosis, women with breast cancer will start to consider their choices in looking for treatment that exceeds the conventional one to maximize the benefit of treatment itself, and minimize possibility of cancer restoration.

The choice of kinds of medication done by the clients is not only that of conventional but also an alternative. Wanchai et al. (2010) claim that such choice is based on the perception that they could give benefits by fulfilling patients' need to return to Mother Nature and improving psychological and emotional recovery so that their mind becomes safe and peaceful. On the other hand, Koentjaraningrat (2009) claims that in every society, humans won't be able to ignore knowledge about others. Such knowledge on anatomy in cultures rarely touched by medical studies is surprisingly extensive too. The knowledge to cure illness in villages are done by witches or shamans and masseurs. Witchcraft typically uses much of dark magic. Besides, they also have broad knowledge about characteristics of human organs, their positions, and the structure of nerves and stuff.

Moreover, the improvement of physical health and psychological prosperity is another attempt constantly done by the clients. Eating pattern or diet as well as other nutrition fulfilling efforts are also included. This is relevant to what Ansa, et.al (2016) have to say: most respondents believe that obesity (52,7%), less physical activity (48.7%) and high-fat diet (63.2%) are related to cancer restoration. Another attempt is to minimize effect from symptoms of breast cancer, such as pain.

On the other hand, the attempt to maintain psychological prosperity is made by avoiding stressor and keep her mind calm. As (Livneh 2000) says that personal control or self/cognitive restraint is another strategy employed by cancer survivors to overcome stress by the illness. This is the predictor of positive psychosocial adaptation and relieves stress.

The attempt of psychological prosperity is based on a good belief about giving meaning about illness in spiritual terms. Koltko-Riverra (2004) and Vidal (2008) claim that the view based on someone religious, spiritual, existential, or natural, is the basis of mind and behavior of that person alone.

A chain of treatment and therapy attempts to balance her life with the existing culture becomes a continuous subject to learn and do for the rest of their life. Therefore, struggling to face breast cancer becomes a constant meaning event for a Sundanese woman, thus becomes part of her culture. The result of such inculturation is described in a mapped pattern in the life of breast cancer clients.

A life cycle will be seen and learned differently from the life of everyone else. It is necessary to have a positive coping mechanism in making that happen. Adaptation pattern in someone will determine how she will live her life. Those who live in a place with a particular culture will have to submit to several universal factors affecting their life. It goes the same way with breast cancer clients. From the result, the researcher describes two factors affecting adaptation patterns of breast cancer clients in living their life: economy and socio-relative.

Economic factors are one of the meaningful factors to the life of breast cancer clients. Change of economic conditions due to illness affects adaptation pattern of their life. Yan et al. (2016) in their research revealed that cancer is a high-class illness for patients and their health. Therefore, high income from family and health insurance plan could improve life quality of breast cancer. Lack of social and economic factors are main predictors of death among breast cancer patients (Walsh et al. 2014). In line with that, Pisu et al. (2010) claim that "out of pocket" money is a significant burden for survivors even after early treatment. Cancer economic burden is also complementary cost and psychosocial burden.

This cost, which is time value spent with illness, represents the time that could not be dedicated to common activities and considered the loss of productivity for patients and society. Meanwhile, psychosocial cost refers to the loss of life quality regarding cancer. This cost is related to anxiety, depression, cancer burden, marriage conflict, social negative change and family relation, and future indeterminacy. The total cost consists of that of productivity loss (89% of it) and health treatment cost (11%) (Broekx et al. 2011).

Besides economic factor, social factor and relative factors are paramount factors for breast cancer clients. Social support from family, relative, friend, bosses from work and government also affects the adaptation pattern of breast cancer clients in living their life. Yan, et.al (2016) mentions that available social support from family member, friend, and neighbor, related significantly to improve life quality of breast cancer patients. Mokuau & Braun (2007) concludes family as the most important source of emotional and concrete support for women with cancer. Therefore it is necessary to identify the needs to improve informational support for patients and family.

The family is the closest part of the life of breast cancer patients. They are defined as two individuals or interdependent for emotional and physical bond as well as economic support. Meanwhile, in social theory, family is a group of people united by marital, blood, and adoptive bond, where they live in one household, interact and communicate each other in their role as wife and husband, mother and father, child and daughter, brother and sister; and try to create and maintain general culture. Besides, family support is an interpersonal relation that protects someone from bad stress effect (Kaplan and Sadock, 2002).

The research of Livneh (2000), another strategy directed to relieve stress among people with cancer is to find support from other. The result of this research shows a positive relation between seeking and reporting satisfaction of social support an emotional digression and psychological restraints, psychosocial and subjective perception is higher than prosperity.

All life pattern and cycle ends up in a belief about the meaning of the end of life. It goes the same way with informants in this research. The meaning of "end of life" is described based on the life cycle of the clients as a manifestation of the illness. Many attempts to maintain life quality has been made, but there is one time where all that must stop. Izumi et al. (2012) define "end of life" as a wise period where one realizes that her life must end. It's not a period medically determined before death. The awareness of "end of life" could be raised by patient's own knowledge or result from medical assessment without patients' notice.

Breast cancer is one of death causes. This general stereotype goes all over patients with different kinds of cancer. Where attempts are made to maintain function well with illness or diagnosis that threatens life for the long term. It is then followed by extreme fizzling of condition for few weeks or months before death. This stereotype is relatively predicted after tumors become unresponsive to the medication and escalate (Izumi et al. 2012).

In other words, "end of life" becomes an inseparable meaning from life undergone by breast cancer clients. However, there is one final goal they want for the "end of life" phase—that is, gathering with family members before until their last moments. Such meaningfulness in a Sundanese culture highly affects the life of these clients up to their deathbed.

The life cycle of Sundanese women with breast cancer describes that there is one enculturation pattern in their life. Not only does it become a part connected directly to their life

but also to other domains therefore creating an inseparable unified pattern.

CONCLUSION

Based on the result of research and analytical observation of all emerging domains, it is concluded that there is a cultural pattern in the life of breast cancer clients in living their life. This pattern becomes the behavioral basis for them throughout their life, all attempts were made to support one another in maintaining their life. Based on the existing cultural patterns, the illness they possess brings them to give meaning to life cycle so that it makes them learn, study, and apply the characteristics of treatment and medication in between their illness period to become a culture, which might be different from other people.

There is no exempt from adaptation pattern for breast cancer clients in living their life. Some universal factors also affect such pattern, which is social and kinship as well as the economy. Both factors become paramount factors in their life.

Although the end of their life pattern will meet with the phase of the end of life, they have attempted to maintain their life quality from the beginning of diagnosis to the end of their life.

The result of this research shows an interconnected cultural pattern in the life of these patients. It is thus advised that nurses provide service to breast cancer clients by applying nursing care inherent to their cultural values.

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REFERENCES

Broekx, S. et al., 2011. The costs of breast cancer prior to and following diagnosis. *The European Journal of Health Economics*, 12(4), pp.311–317. Available at: http://www.ncbi.nlm.nih.gov/pubmed/20306109 [Accessed May 31, 2017].

Case, D.O. et al., 2005. Avoiding versus seeking: the relationship of information seeking to avoidance, blunting, coping, dissonance, and related concepts. *Journal of the Medical Library Association : JMLA*, 93(3), pp.353–62. Available at: http://www.ncbi.nlm.nih.gov/pubmed/16059425 [Accessed May 31, 2017].

Ekadjati, E., 2014. *Kebudayaan sunda. Suatu pendekatan sejarah.*, Bandung: PT Dunia Pustaka.

Helman, C., 2007. *Culture, health and illness* 5th ed., Hodder Arnold. Oxford University Press.

Izumi, S. et al., 2012. Defining end-of-life care from perspectives of nursing ethics. *Nursing Ethics*, 19(5), pp.608–618. Available at: http://www.ncbi.nlm.nih.gov/pubmed/22990423 [Accessed May 31, 2017].

Jenkins, V., Fallowfield, L. & Saul, J., 2001. Information needs of patients with cancer: results from a large study in UK cancer centres. *British Journal of Cancer*, 84(1), pp.48–51. Available at: http://www.ncbi.nlm.nih.gov/pubmed/11139312 [Accessed May 31, 2017].

Khakbazan, Z. et al., 2014. Help Seeking Behavior of Women with Self-Discovered Breast Cancer Symptoms: A Meta-Ethnographic Synthesis of Patient Delay F. Harris, ed. *PLoS ONE*, 9(12), p.e110262. Available at: http://dx.plos.org/10.1371/journal.pone.0110262 [Accessed May 31, 2017].

Koentjaraningrat, 2009. *Pengantar antropologi. Pokok-pokok etnografi II*, Jakarta: PT RinekaCipta.

Lambert, S.D. & Loiselle, C.G., 2007. Health Information Seeking Behavior. *Qualitative Health Research*, 17(8), pp.1006–1019. Available at: http://qhr.sagepub.com/cgi/doi/10.1177/1049732307305199 [Accessed May 31, 2017].

Leininger, M., 2005. Overview of Leininger's Ethnonursing Research Method and Process. Available at: http://www.madeleine-leininger.com/cc/researchmethod.pdf [Accessed May 31, 2017].

Livneh, H., 2000. Psychosocial Adaptation to Cancer: The Role of Coping Strategies. *The Journal of Rehabilitation*, 66(2), p.40. Available at: https://www.questia.com/library/journal/1G1-62980227/psychosocial-adaptation-to-cancer-the-role-of-coping [Accessed May 31, 2017].

Lopez-Class, M. et al., 2011. Quality of Life Among Immigrant Latina Breast Cancer Survivors: Realities of Culture and Enhancing Cancer Care. *Journal of Cancer Education*, 26(4), pp.724–733. Available at: http://www.ncbi.nlm.nih.gov/pubmed/21706194 [Accessed May 31, 2017].

Mokuau, N. & Braun, K.L., 2007. Family support for native Hawaiian women with breast cancer. *Journal of Cancer Education*, 22(3), pp.191–196. Available at: http://link.springer.com/10.1007/BF03174336 [Accessed May 31, 2017].

Pati, S. et al., 2013. Patient navigation pathway and barriers to treatment seeking in cancer in India: A qualitative inquiry. *Cancer Epidemiology*, 37(6), pp.973–978. Available at: http://www.ncbi.nlm.nih.gov/pubmed/24211153 [Accessed May 31, 2017].

Pisu, M. et al., 2010. The out of pocket cost of breast cancer survivors: a review. *Journal of cancer survivorship : research and practice*, 4(3), pp.202–9. Available at: http://www.ncbi.nlm.nih.gov/pubmed/20401542 [Accessed May 31, 2017].

Rankin, S., 2011. Influence of Coping Styles on Social Support Seeking Among Cancer Patient Family Caregivers. *Walden Dissertations and Doctoral Studies*. Available at: http://scholarworks.waldenu.edu/dissertations/908 [Accessed May 31, 2017].

Walsh, P.M. et al., 2014. Socioeconomic disparity in survival after breast cancer in ireland: observational study. K. Metze, ed. *PloS one*, 9(11), p.e111729. Available at: http://dx.plos.org/10.1371/journal.pone.0111729 [Accessed May 31, 2017].

Wanchai, A., Armer, J.M. & Stewart, B.R., 2010. Breast Cancer Survivors' Perspectives of Care Practices in Western and Alternative Medicine. *Oncology Nursing Forum*, 37(4), pp.494–500. Available at: http://www.ncbi.nlm.nih.gov/pubmed/20591809 [Accessed May 31, 2017].

Yan, B. et al., 2016. Determinants of Quality of Life for Breast Cancer Patients in Shanghai, China R. M. Lafrenie, ed. *PLOS ONE*, 11(4), p.e0153714. Available at: http://dx.plos.org/10.1371/journal.pone.0153714 [Accessed May 31, 2017].

DEVELOPMENT OF PERFORMANCE ASSESSMENT INSTRUMENT FOR NURSES BASED ON *WEB* IN INPATIENT UNIT

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ABSTRACT

Introduction: Performance assessment instrument will be problematic when it is not representative in describing the competency because it is not obvious indicators and inappropriate performance standard to nursing's task. The purpose of this study is to develop nurses' performance assessment instrument based on the web from multi sources assessment inpatient unit at SMC Hospital. **Methods:** This study had two phases. The first phase was an explanatory overview of the performance assessment system using questionnaires completed by 53 respondents of nurses, selected by purposive sampling. Instrument development based on FGD with six decision makers in the hospital. Validity was tested by *Pearson Product Moment Correlation* and reliability of instrument's was tested by *alpha Cronbach*. The second phase was socialization and instrument test to observe the quality of instrument using a questionnaire by 47 respondents and recommendations made by 8 participants of FGD. The samples were selected by purposive sampling technique. Performance assessment system was moderate at 58.49%. All questions which aimed to measure the performance of nurses were valid and reliable. The quality of nurses' performance assessment instruments based on the web was a good category, which was functionality: 81.60; reliability: 78.16; efficiency: 80.85; usability: 81.70 and portability: 81.70. **Results:** The result was a web-based assessment format, scoring with Likert scale, resource assessment by the direct supervisor which was a multisource evaluator, the development of performance graph, and confidentiality of data on the database server. **Discussion:** Recommendations for hospital is to make policy based on the final value of the performance assessment by the supervisor which was multisource feedback and it needs a global writing on a form of performance assessment result.

Keywords: assessment instrument, nurses' performance, web

INTRODUCTION

Performance measurement is an important thing for the development of the health care system (Beyan & Baykal 2012). Performance assessment instrument will be a problem if it does not describe competencies (Kalb et al. 2006) and inappropriate performance standard to the nurses' task (Nikpeyma et al. 2014). Satisfaction of the performance assessment which is done by managers influences positive things to build and improve performance, if the employees are not satisfied and feel the unfair process, they are unlikely to receive and utilize the assessment (Keeping & Levy 2000; Giles & Mossholder 1990 cit. Dusterhoff et al. 2013).

Basic competency assessments for nurses at Samarinda Medika Citra hospital had the same characteristics with the assessment for the whole employees. The nurse's performance assessment was conducted by self-assessment – supervisor evaluation (SA-PA). Indicator assessment was in accordance with nursing profession, and the development of assessor resources have been expected to increase the satisfaction of the assessment process and the results of the assessment utilized. The purpose of this study is to develop nurses' performance assessment instrument with web-based in the inpatient unit of Samarinda Medika Citra Hospital.

The performance assessment will not increase productivity if there are biased, inaccurate and not accepted by users due to errors in the content evaluation, which are bias in the evaluation process, incompatibility between the needs of employees and the purpose of the assessment or there is not clear performance dimensions (Giangreco, et al. 2012 cit. Nikpeyma et al. 2014). Less objective assessment leads to a subjective value. Assessment which is not objective, unfair or unreliable (called bias such as Hallo effect, leniency or strictness, central tendencies, Matthew effect and the supervisor 's bias) causes distortion of the assessment process and will also be a source of frustration for employees who are discriminated (Nikpeyma et al. 2014).

Multisource assessment is proven as an alternative to conventional valuation methods to increase employee's satisfaction ratings (Manoharan et al. 2012). Development of information technology and communication may cause nurses to have a computer-based management information system to support decision-making. Data processing with computer assessment is easier, faster, more reliable and more organized to avoid human

error manually. People nowadays use the internet to obtain information, it is supported by the development of mobile devices such as tablets and smartphones which make people easier to perform Web-based activities (Richwandi 2015).

The concept of nurse performance assessment instrument using an approach is carried out by several sources. The assessment using the web aims to protect confidentiality and accessed restrictions reports. Graph of performance assessment is expected to map out the nurse work performance. The performance indicators in this research are developed with basic competencies (behaviors work and personal character) stated in Government Regulation Number 46 of 2011, and professional performance standard of nurses in the patient satisfaction views according to Nursalam (2014). Instrument's quality will be assessed by software standards of ISO 9126. Validity and reliability of the instrument are tested before it was put in the web application.

MATERIALS AND METHODS

This research design was an explanative survey to describe nurses' performance assessment and construct a development of performance instrument used with Focus Group Discussion (FGD). Validity was tested by Pearson Product Moment Correlation and reliability was tested by Alpha Cronbach. The second round was socialization, mentoring, and testing of the instrument by the user from the administrator, head of nurses, nurses, and patients. The final result of the instrument testing was evaluation instrument quality and recommendation based on the evaluation.

Sample and participant were selected by purposive sampling technique. The first round of this study was selected 53 samples and 6 respondents for discussion. The second round was 47 samples and six respondents for discussion.

RESULTS

Evaluation of the nurse performance assessment system was conducted by using a questionnaire to 53 sample of nurses in child care unit, maternal care unit, ICU, NICU/ PICU, a maternity room, surgery room and newborn nursery unit. Thirty-one nurses (58.49%) found had moderate performance, 20 nurses (37.74%) had good performance and 2 nurses (3.77%) still had poor performance in doing an assessment to patients. The component of the assessment performance described in Table 1.

Table 1. Evaluation of The Nurses' Performance Assessment Component in inpatient unit at Samarinda Medika Citra hospital (N=53)

No	Component	Categories			
		Good f (%)	Moderate f (%)	Poor f (%)	Total f (%)
1	Evaluation Criteria	37 (69,81)	6 (11,32)	10 (18,87)	53 (100)
2	Value of Performance Measurement	44 (83,02)	7 (13,21)	2 (3,77)	53 (100)
3	Performance assessment system	35 (66,04)	12 (22,64)	6 (11,32)	53 (100)
4	Assessment feedback	36 (67,92)	11 (20,75)	6 (11,32)	53 (100)
5	Performance report	30 (56,60)	22 (41,51)	1 (1,89)	53 (100)
6	Performance achievement determination	25 (47,17)	17 (32,08)	11 (20,75)	53 (100)
7	Assessor objectivity	34 (64,15)	19 (35,85)	0 (0)	53 (100)
8	Satisfaction of performance assessment system	46 (86,79)	6 (11,32)	1 (1,89)	53 (100)
9	Satisfaction of supervisor's evaluation	37 (69,81)	15 (28,30)	1 (1,89)	53 (100)
10	Supervisor's knowledge for true performance	31 (58,49)	20 (37,74)	2 (3,77)	53 (100)
11	Satisfaction of feedback	27 (50,95)	15(28,30)	11(20,75)	53 (100)

Table 2. Quality Value of Nurses Performance Assessment Instrument based on the web (N=47)

No	Component	Categories			Total f (%)
		Good f (%)	Moderate f (%)	Poor f (%)	
1	*Functionality*	38 (80,85)	9 (19,15)	0	47 (100)
2	*Realiability*	30 (63,83)	17 (36,17)	0	47 (100)
3	*Usability*	35 (74,47)	12 (25,53)	0	47 (100)
4	*Efficiency*	33 (70,21)	14 (29,79)	0	47 (100)
5	*Portability*	34 (72,34)	13 (27,66)	0	47 (100)

Focus group discussion was conducted by the policy makers to discuss the issue and make recommendations for the development of the instrument. Validity and reliability's instrument content tested, either the institution evaluation or the patient assessment, showed valid and reliable for all questions.

In the second round, socialization and mentoring during instrument testing in the adult patient unit 1, 2 and 3, conducted by the researcher to help user system, provide manual book user for the instrument based on the web, provide contact number which can be reached anytime if facing obstacles. During the trial, if an error occurred, the researcher would communicate to the web developer for instrument recovering.

The instrument was applied to 47 users (1 administrator, 3 nurse unit managers, 29 nurses and 14 patients). The result for all quality indicators was good with the functionality (81.60); reliability (78.16); efficiency (80.85); usability (81.70), and portability (81.70). FGD conducted by users did observe the evaluation during the instrument trial and made recommendations for its further development.

The development of nurses performance assessment instrument was basic competencies assessment indicator. The scoring system was originally used 1a, 1b, 2a, 2b, 3a, 3b, 4a and 4b (score 1-8) with a maximum value of the acquisition of 8, while the development of instrument using a Likert scale with scoring (1-5) according to the indicator denominator. SA-PA assessor source was developed with peer and patient assessment rating. The database was provided safely on the server. The web-based instrument could be modified according to hospital needs.

DISCUSSION

The majority of evaluation of the performance assessment system was a moderate category. The most contributing proportion of satisfaction with the system was good. The source of the assessment methods was self-assessment supervisor (SA-PA). Performance evaluation practices have a positive influence on employee performance (Gyensare & Asare 2012).

Development of instruments in this study was the structure of the instrument and the content of the assessment criteria. One of the main parts of the implementation was performance measurement. It was influenced by factors such as perspective assessment of decision makers, data source, the focus of measurement, the achievement of development targets, types of indicator, data and investigation types. Performance assessment using this web allows structures to start measurement and qualitative types of indicator that provide a view of the professional behavior performance of nurses, the development of each work behavior assessment indicator can be used as a material for the supervisor to supervise its nurse subordinates. The data type uses a Likert scale (1-5), which allows comparing the measurement values with the numerator and denominator defined. Three of the eight stages performance assessment according to Olabode et al. (2013) can be provided by a web-based performance assessment instruments: 1) Ratings. This stage involves documenting the performance by observing, reminding, evaluating, communicating, assessment and analysis of data. This stage is putting together a record of votes. The information technology-based applications usage enables the acceleration of the conventional paper-based assessment and mathematical calculation performance score manually; 2) Feedback. After the stage of formal assessment, feedback sessions is done as willingness. This session should involve verbal communication, listening, problem-solving, negotiation,

compromising, conflict resolution, and agreement; 3) Decision-making. Results of the assessment and feedback will lead many decisions made for example of the award (promotions, incentives, etc.) and penalties (e.g., demotion).

Web quality assessment instruments indicators are functionality, reliability, efficiency, usability, and portability. Good was the highest percentages of functionality (web capability assessment of performance in meeting user needs in its function to measure the performance of nurses). The concept of the instrument characteristics was in accordance with the characteristics of software quality by ISO 9126 (International Organization for Standardization), in this study are based assessment from the point of view (user's view). Functionality is the ability to provide the satisfaction of user needs. Reliability is the ability of the software to treat level of performance. Usability is the ability associated with the use of the software. Efficiency is the ability associated with physical resources that are used when the software is run. Portability is the ability associated with software capabilities that are sent to different environments. An instrument is a tool or a means by which to measure the level of scientific work, official documents and legal form, can be used for research tools and results of data collection used as an ingredient in achieving objectives or specific policy.

CONCLUSIONS

The conclusion of this study 1) Nurses performance assessment system in SMC hospital was in enough category, poor category was the most dominating proportion for job awarding and satisfaction determination of the assessment; 2) FGD recommendation is to develop assessor source with peer and patient assessment, and also assessment type consists of checklist, recording, and note assessment, time assessment, specific indicator assessment for nurse task and questionnaire for assessment. Nurse achievement started from getting scores in 80 for final score of performance, needing essay column to complete the assessment, legalization for the recording assessment and security assessment process in the instrument based on the web which is the regulation needed; 3) All of the question for assessor from head, peer and patients were valid and reliable; 4) Socialization and mentoring to users of instrument was based on the web during trial and there was manual book for application users; 5) Nurse performance assessment instrument was based on web assessed by all user levels (admin, head of the nurse, nurses, and patients), they showed good category for all indicators (functionality, reliability, efficiency, usability dan portability) 6) FGD with users made recommendations that needed socialization and training performance assessment instrument user who was specifically set by hospital, the registration should be done independently by entering nurse’s email which managed by administrator. In developing the content of assessment indicators, they did similar additional indicators with technical competence assessment.

Recommendations of this study for the hospital is to invest in IT engineering, and also it should involve another profession (doctor, physiotherapist, nutritionist, etc.) as an assessor, makes policies about the final score of nurse assessment from multi-sources and increase internet network bandwidth in the hospital. For managers and nursing committee, they should formulate a fair scoring in the assessment of the nurse's performance. For the head nurse, they should continue motivating nurses in using the web to provide its assessment evaluation instrument for the next development. For further research should develop the web with quantitative indicators for nurses assessment.

REFERENCES

Beyan, O.D. & Baykal, N., 2012. A knowledge based search tool for performance measures in health care systems. *Journal of medical systems*, 36(1), pp.201–21.

Dusterhoff, C., Cunningham, J.B. & MacGregor, J.N., 2013. The Effects of Performance Rating, Leader-Member Exchange, Perceived Utility, and Organizational Justice on Performance Appraisal Satisfaction: Applying a Moral Judgment Perspective. *Journal of Business Ethics*, pp.1–9.

Gyensare, M.A. & Asare, J., 2012. Relationship between human resource (HR) practices and perceived

performance of psychiatry nurses in Ghana. *African Journal of Business Management*, 6(6), pp.2137–2142.

Kalb, K.B. et al., 2006. A competency-based approach to public health nursing performance appraisal. *Public Health Nursing*, 23(2), pp.115–138.

Manoharan, T.R., Muralidharan, C. & DeshmukDh, S.G., 2012. A composite model for employees' performance appraisal and improvement. *European Journal of Training and Development*, 36(4), pp.448–480.

Nikpeyma, N. et al., 2014. Problems of Clinical Nurse Performance Appraisal System : A Qualitative Study. *Asian Nursing Research*, 8(1), pp.15–22.

Olabode, T., Abayomi, A. & Abayomi, A., 2013. Appraisal system : A tool for performance in selected organizations in Nigeria. *International Journal of Sociology and Anthropology*, 5(7), pp.249–261.

Richwandi, P.P., 2015. PENGGUNAAN HTML5 DALAM PERKEMBANGAN WEB 2 . 0 YANG DIRANCANG DENGAN RESPONSIVE WEB DESIGN. *Jurnal Teknik Informatika*, Juni, pp.1–10.

RED ROSELLA TEA AND AVOCADO AS SIMVASTATIN THERAPY SUPPORT REDUCE TOTAL CHOLESTEROL

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ABSTRACT

Introduction: Hypercholesterolemia is a condition characterized by high levels of total cholesterol in the blood. Many studies have proven that steeping tea rosella and flesh of an avocado can reduce total cholesterol levels. This study was conducted to determine the effectiveness of therapy companion rosella tea and avocado in lowering total cholesterol levels in hypercholesterolemic clients. **Method:** This type of research is a quasi-experimental study with pre-post test control group design. The population study was a client with hypercholesterolemia in the working area of Menganti health centers. First sample group consisted of nine respondents received the drug Simvastatin 10 mg and rosella tea consumed as much as 2 g 1x/day. The second group consisted of nine respondents received the drug Simvastatin 10 mg and avocado meat weighing 330 grams were consumed 1x/day. The control group consisted of 11 respondents have a drug Simvastatin 10 mg oral 1x daily at night before bed. All groups examined total cholesterol levels before treatment and after treatment on day 15. **Result:** The results of one-way ANOVA test showed a significant difference between before and after treatment in the first group (p=0,001) and the second group (p= 0,005), and there is no significant difference before and after treatment in the control group (p= 0,248). The difference between the three groups showed p= 0.025. **Conclusion:** The conclusion of this study is giving rosella tea, and avocado has the same effectiveness in lowering total cholesterol levels so that health workers can suggest the use of rosella tea and avocado as a companion therapy to reduce total cholesterol level.

Keywords: Hypercholesterolemia, Rosella tea, avocado, simvastatin

INTRODUCTION

Progress in the field of health and technology utilized by the community at present. Health is very expensive, so for those who are trying to maintain good healthy and for the sick seeking treatment are not harmful to him. One of them with an effort to make the treatment go back to nature. The wider community is now beginning to switch from modern medicine (medical) into complementary medicine, even though modern medicine is also very popular among the people discussed. Non-conventional intervention is one of the alternatives or complementary medical interventions. Intervention complementary (complementary therapies) are all interventions used as an adjunct to conventional interventions recommended by the implementation of individual health services. According to the Health Profile of Indonesia in 2008, the national population morbidity rate is 33.24% of the total is 65.59% chose their treatment using modern and traditional medicine, the remaining 34.41% choose outpatient treatment to health centers, physician practices or to other medical facilities. This shows public interest in traditional medicine is quite high (Kiki 2013).

In connection with this traditional medicine governments to establish policies and laws that regulate complementary medicine among them is Law No. 36 of 2009 on Health Article 1 para 16 Healthcare is the traditional treatment or treatment in a manner and drugs that draws on the experience and skills of hereditary empirically accountable and applied in accordance with the norms prevailing in the community, Regulation of the Minister of Health, No: 1076/Menkes/SK/2003 on traditional medicine, and the Regulation of the Minister of Health, No: 1109/Menkes/Per/ IX/2007 on the implementation of complementary-alternative medicine in health care facilities.

At the policy and legislation, one health worker role is a nurse. Nurses participate in the effort to develop complementary medicine through research. According to the Health Profile of Indonesia in 2008, the national population morbidity rate is 33.24% of the total is 65.59% chose their treatment using modern and traditional medicine, the remaining 34.41% choose outpatient treatment to health centers, physician practices or to

other medical facilities. This shows public interest in traditional medicine is quite high (Kiki, 2013). The use of complementary interventions is also used for clients who have problems with cholesterol levels in the blood. Cholesterol is a fatty substance found in every cell of our bodies (Bull, E.& Morrell 2007).

Today many people are trying to use alternative treatments, such as with roselle tea consumption of plant Hibiscus sabdariffa and consume the flesh of an avocado. Both of these materials as an alternative option because both contain the active ingredient which has a benefit when consumed it regularly through the regulatory processes in the body can lower total blood cholesterol, triglycerides, LDL and HDL may increase.

Efforts to reduce cholesterol levels are necessary to remember the first Hypercholesterolemia can occur at the age of 50 years and over. But now, research in 2004 by the National Heart, Lung and Blood Institute showed that 9.3% of hypercholesterolemia occurs at a young age i.e., 25-34. Not surprisingly, the National Heart, Lung and Blood Institute in the United States advocated for routine check cholesterol levels sometime after the age of 20 years, the goal estimates the risk of heart disease. WHO reported in February 2012 and that the number of clients of heart disease in developing countries like Indonesia will increase by 137% in 2020, whereas in developed countries is only 48%. Research and Development of the Ministry of Health stated that the percentage of deaths from cardiovascular disease increased from 5.9% (2004) to 9.1% (2007) and 19.0% (2011). Hypercholesterolemia is also a risk factor for the cause of death at a young age, as reported by the World Health Organization (WHO) in 2002, there were 4.4 million deaths due to CHD are due to hypercholesterolemia or 7.9% of the total number of deaths at a young age (Yulinda 2015).

Based on these issues, the case needs to be handled hypercholesterolemia effectively. Efforts to reduce hypercholesterolemia, in addition to the provision of treatment with cholesterol-lowering drugs may be accompanied by efforts to alternatives to the use of herbs. Research on granting steeping red rosella flower petals already been done to lower blood cholesterol levels as well as the flesh of an avocado. It's just that until now has never been any studies to determine the effectiveness of the comparison between the tea Rosella flower petals dried red and fresh Avocados in a decrease in total cholesterol levels for clients hypercholesterolemia. Therefore, researchers wanted to examine the comparative effectiveness of tea Rosella with Avocado fruit in a decrease in total cholesterol levels in hypercholesterolemic clients.

METHOD

The design of this research is a quasi-experimental pre-posttest control group design. The treatment group consisted of group 1 who were given intervention of rosella tea and simvastatin, group 2 given the flesh of avocado and simvastatin, while the control group was group 3 which only given simvastatin.

The population in this study were all clients of hypercholesterolemia in Puskesmas Menganti Gresik. The sample in this study is part of hypercholesterolemia existing clients in Puskesmas Menganti Gresik. Sample inclusion criteria were aged 25-50 years, men and women with total cholesterol levels ≥ 200 mg/dl, can read and write. Exclusion criteria samples are client hypercholesterolemia with concomitant diseases such as stroke or cardiovascular disease, liver disease, diabetes mellitus, thyroid, gastritis, client hypercholesterolemia who have low blood pressure (hypotension), clients who are allergic rosella tea or avocado.

The tools used in this research are: questionnaire, observation sheets, food recall, scales for weighing cake dried rosella petals weighing 2 grams of avocado flesh and weighing 330 grams, the tool checks the blood cholesterol level is 100. Biolizer research material is dried petal tea red rosella obtained from PT Dita renowned, bacon avocado butter types derived from avocado farmers in Lumajang, and venous blood specimen taken from the respondents.

Rosella flower petals dried red and the flesh of an avocado is ripe given to the treatment group. Dried flower petals red rosella weighed weighing 2 grams are packed in small plastic wrap number 14 and a teaspoon of sugar are packaged in a small plastic wrap and some 14 drug simvastatin 10 mg was given to each of the respondents in the treatment group 1. Meat Avocado ripe weighed weighing 330 grams for one-time consumption given once daily for 14 days as well as drug

Simvastatin 10 mg were given to each respondent in the treatment group 2. in the control group given the drug Simvastatin 10 mg taken once daily consumed at night before bed.

At the end of the study, after the intervention for 14 days in the treatment group 1, 2, and control groups were then carried back to the measurement of blood cholesterol levels at day 15. The respondents in the evening before the examination is recommended to fast for at least 8 hours. Respondents to the clinic the next morning to do blood tests in the laboratory clinic. The results included in the observation sheet The collected data normality test. In the treatment group, 1 and 2 tested using the Shapiro-Wilk normality. In the treatment group 1 and 2 to analyze the decrease in total cholesterol levels using a paired t test. Based on the analysis using SPSS, the research data in the control group are not normally distributed, then the appropriate test is Wilcoxon. In the treatment group 1, 2 and control after the completion of the normality test are then performed statistical tests as follows:

1. Univariate analysis

Univariate analysis performed to obtain descriptive characteristics of each of the variables studied included demographic data as well as confounding variables. All demographic data described by the value of the number and percentage of each group then presented using tables and interpreted.

2. AnalysisBivariat

The bivariate analysis was performed on two variables to determine the relationship or not. Among the independent variables with the dependent variable characteristics of respondents in total cholesterol levels by the statistical test. Data in the form of nominal (gender, occupation, food recall, physical activity/exercise, and smoking was analyzed using contingency coefficient. Data education, long-suffering, body mass index (BMI) were analyzed using a categorical form spearman`s correlation test. Age Pearson statistical test.

The test that used to compare the two data before and after treatment for each group In the treatment group was paired T-test. ANOVA test was used to compare the decline in total cholesterol levels between treatment groups 1, 2 and the control group.

RESULTS

The test results of normality with Shapiro-Wilk test showed the treatment group 1 and 2 normal distribution of data so as to compare data before and after treatment using paired T-test. In control group, data is not normally distributed so as to compare data before and after taking the drug using the Wilcoxon test. The test results of a test of homogeny of variances, the three groups have the data shows the same variant as the value of p = 0,404 or p> 0.05. A further test is used Bonferroni test.

The results of paired t-test show that blood cholesterol levels of hypercholesterolemic client decreased significantly, This is evidenced by the value of significance p=0,001 or p<0,05 (table 1). Show that in group 2, the results if the test statistic Paired T-Test many reduce cholesterol levels of the total significant to client hypercholesterolemia who gets avocado meat and Simvastatin medicine. This is evidenced by the value of significance p=0,005 or p < 0,05 (table 2).

Table 1. Average total blood cholesterol levels before and after treatment in group 1

Group 1	Number f %	Total Cholesterol Levels (mg/dl)± Standart Deviation	pValue
Pre-Test	8 100	258,4 ± 31,464	0,001
Post-Test	8 100	193,9 ± 34,893	

Table 2. Average total blood cholesterol levels before and after treatment in group 2

Group 2	Number f %	Total Cholesterol Levels (mg/dl)± Standart Deviation	p-Value
Pre-Test	9 100	252 ± 31,941	0,005
Post-Test	9 100	179,3 ± 49,922	

Table 3. Average total blood cholesterol levels before and after treatment in control group

Group 3	Number f %	Total Cholesterol Levels (mg/dl)± Standart Deviation	p-Value
Pre-Test	11	221,5 ±13,779	0,248
Post-Test	11	205,5 ± 46,025	

Table 4 Effectiveness between treatment groups 1, 2, and control

Group	Mean ± Standart Deviation	p-Value
P1 (n=8)	64,50 ± 34,978	0,025
P2 (n=9)	72,67 ± 55,996	
K (n=11)	16,00 ± 46,052	

Information:
P1 = Group 1, Rosella tea by steeping 2 gr/hr and drug Simvastatin 10 mg
P2 = Group 2, given flesh of an avocado 330 gr/hr and drug Simvastatin 10 mg
K = The control group, given the drug Simvastatin 10 mg

The result of control group shows that giving only simvastatin medicine to a client with hypercholesterolemia reduce total blood cholesterol but not significant (p=0,248 or p>0,05) (table 3).

Table 4 showed ANOVA test result in a significant difference between first group, two group and the control group with p=0,025.

DISCUSSION

Results of research can be seen in the treatment group 1 and 2 found a significant decrease in total cholesterol levels between pre-test and post-test. This suggests that the companion therapy rosella tea and bacon avocado effective in lowering total cholesterol levels in clients with hypercholesterolemia. The results of the study in the control group there was no decrease in total cholesterol levels were significantly in hypercholesterolemic clients who received the drug Simvastatin. The results showed that when seen from the difference between each group, the treatment group 2, has the greatest difference is 72.6 mg/dl, it is supported by the results of ANOVA test showed no significant difference between treatment groups 1, 2 treatment and control groups.

The role of Rosella flower petals itself is as anti-cholesterol due to the effect of antioxidant compounds contained by rosella flower petals are flavonoids and polyphenols can reduce fat deposits (LDL) in the blood vessels (Mardiyah; Sarwani; Ashadi; Rahayu 2009). Flavonoids are one of the antioxidants and can capture free radicals. Flavonoids stabilize free radicals by lowering the energy activity and further inhibit the oxidation of LDL. Inhibition of oxidation of LDL cholesterol levels decreased. Substance anthocyanins can lower lipid profile, namely, cholesterol, triglycerides, and blood LDL cholesterol and raise HDL cholesterol levels. Also, the content of niacin in Rosella can degrade back triglycine (Totong 1993) ride synthesis. Niacin can also affect the activity of the enzyme lipoprotein lipase resulting in decreased production of LDL in the liver resulting in a decrease in total cholesterol, LDL, and triglycerides. Niacin can increase HDL. Rosella also contains vitamin C can reduce the absorption of triglycerides by acting as a laxative (Sotyaningtyas 2007), Vitamin C is in addition to reduce the absorption of triglycerides also plays an important role in the breakdown of cholesterol in the body.

In the treatment group, 2 showed that administration of the drug Simvastatin and flesh of an avocado could cause a decrease in total cholesterol levels. The results are consistent with results of previous studies (Setiawan 2015) which states Ethanol Extract Fruit Avocados can lower total cholesterol levels in male Wistar rats. Other research supports is research Anggraheny (2007) which states that the provision of avocado juice led to a decrease in total cholesterol levels were significant at all doses compared to the control group. The results of the study (Usman 2013) shows that there are differences in the average decrease cholesterol levels in the intervention group and the control group.

All three previous studies avocado flesh before being given processed first, there is presented in the form of juice or extracted. In this study conducted avocado meat supplied directly without being processed first. So that

the dose is given appropriate without an addition of other materials such as water when making juice. It also allows individuals to consume and retain the active ingredients contained therein to stay awake. According to (Sediatama, A. 2000) flesh of an avocado contains 72.2% Omega-9 oleic acid which is a phytochemical that demonstrate the ability to affect the availability of blood plasma cholesterol. Meat avocado also contains 90% unsaturated fatty acids which have a complex function that is as bioregulator endogenous, structural function, namely water barrier on the skin, nerve tissue as nerve stimulation conducting material, the cell membrane as signal transduction. Regulatory functions, including gene expression, growth factors, moisture membrane and the formation of eicosanoids. Also, the fruit flesh avocado contains beta-sitosterol which phytochemical compounds that serve to normalize blood levels of LDL, triglycerides and total blood fats.

According to Budiana, N.S. (2013) of approximately 90% content of fat in avocados is that 80% in the form of oleic acid, a monounsaturated fat which beneficial for health. The advantages include lowering LDL, total cholesterol, and triglycerides and stabilize blood sugar levels. Fiber and monounsaturated fatty acids along with vitamin C, E and glutathione, may protect arteries from damage due to deposition of LDL. The content of beta-sitosterol can reduce the absorption of cholesterol in the intestine. In the control group, there was no decrease in total cholesterol levels were significantly in hypercholesterolemic clients who received the drug simvastatin alone. Simvastatin is a drug indicated for lowering cholesterol on clients who have hypercholesterolemia. Simvastatin drugs are chemical modifications of the compounds produced by fungi. These drugs included in the HMG-CoA reductase inhibitors that may inhibit the formation of cellular cholesterol and causes a decrease in serum cholesterol and serum LDL, with a slight increase or no change in the levels of LDL (Karch 2010).

Performance Simvastatin drugs are cholesterol-forming enzyme thus inhibiting cholesterol levels in the blood is reduced. The effectiveness of these drugs would be even better when accompanied by the application of a healthy lifestyle such as exercise regularly and stay away from greasy foods.

CONCLUSIONS

Based on the results of the study showed that there are a significants decreases in total cholesterol levels before and after receiving treatment both of the rosella tea with Simvastatin medicine and avocado meat with Simvastatin medicine on hypercholesterolemia clients. There was a significant difference between three groups in reduction of total cholesterol in hypercholesterolemia clients. In conclusion, if they are only consuming Simvastatin medicine like in a group of controlled, without consuming Rosella tea or Avocado meat, the decreasing of total cholesterol in hypercholesterolemia patient is not too good or giving the non-significant result.

REFERENCE

Anggraheny, H.D., 2007. *Influence of Perseaamericana Mill. The Rat Serum Cholesterol Levels Total Male Wistar strain Hyperlipidemia*. Diponegoro University of Semarang.

Budiana, N.S., 2013. *Tumpas Magical Fruit Diseases 1st ed*, Jakarta: Sower Self-Reliance.

Bull, E. dan Morrell, J., 2007. *Simple Guides Cholesterol*, Jakarta: Erlangga.

Karch, A.., 2010. *Textbook of Pharmacology Nursing 2nd ed*, Jakarta: EGC.

Kiki, Z., 2013. *Herbal Healthcare Center*, Bandung: Institute of Technology Bandung.

Mardiyah; Sarwani; Ashadi; Rahayu, 2009. *Cultivation and processing Rosella The Red Myriad Benefits*, Jakarta: Agromedia Library.

Sediatama, A ., 2000. *Nutritional Sciences for Students and Professionals 1st ed*, Jakarta: Dian Rakyat.

Setiawan, F.J., 2015. *Effects of Ethanol Extracts Fruit Avocado (Perseaamericana Mill) Against Total Cholesterol Levels Decreased In male Wistar rats*. Maranatha Christian University.

Sotyaningtyas, C., 2007. *Healthy and Fresh from Nature*,

Totong, M., 1993. *Pharmacology World Anti Hyperlipidemia Mirror of Medicine*

Usman, M., 2013. *Influence of Consumption of Fruit Avocado (Perseaamericana Mill) For total cholesterol levels in patients with hypercholesterolemia in Puskesmas Kota Padang Padang Pasir Year 2013*.

Yulinda, P. H., 2015. *Effect of stepping Rosella To Decrease Cholesterol Hypercholesterolemia Patients*

FACTORS RELATED TO OPEN DEFECATION BEHAVIOR AMONG SCHOOL-AGE CHILDREN IN WEST LOMBOK

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ABSTRACT

Introduction: Open defecation behavior is one cause of poor sanitation, which can lead to various diseases. Open defecation behavior related with cultural factors that become a habit in the daily life in a society which was then followed by their children. This study aimed to analyze factors related to the parental behavior of open defecation in school-age children based on the theory of transcultural nursing in Marce, Sedau Community Health Center Area, West Lombok Indonesia. **Methods**: This was a descriptive research design with cross-sectional approach. Samples were taken by simple random sampling technique and obtained 95 parents of children aged 7-12 years. Independent variables were education level, economy level, cultural values and lifestyle, social and family values, religiosity, technology. The dependent variable was open defecation behavior of the parents in school age children. This research was analyzed using Spearman rho test with significance level α = 0.05. **Results:** education level (p = 0.000; r = 0.390), economy level (p = 0.003; r = 0.298), cultural values and lifestyle (p = 0.000; r = 0.555), social and family (p = 0.000; r = 0.444), religiosity (p = 0.000; r = 0.300), technology (p = 0.000; r = 0354) has a significant relationship with the parents about the open defecation behavior in school age children. **Conclusion**: the intervention was needed on the factors that influence the open defecation behavior by nurses participating directly to communities to increase public awareness about the importance of healthy defecate in a closet to avoid the disease.

Keywords: parent’s behavior, open defecation, school-age children, transcultural nursing theory

INTRODUCTION

The behavior of Open Defecation is one cause of poor sanitation. It can cause various diseases, and it is an example of unhealthy behaviors (Mukherjee 2011). Open defecation behavior is closely connected with a cultural factor which is a habit in daily life (Qudsiyah WA; Pujiati, RS; Ningrum 2015). Initial data retrieval conducted by the researcher showed a lot of people who do open defecation behavior has become a habit for the majority of people. They usually do defecation in the river, so their children follow this habit. Children are more likely to imitate the same model which can be reached by them, seeing other children or people around them (Latifah 2012).

Based on the United Nations International Children's Emergency Fund (UNICEF) data in 2015, Indonesia is the second country with open defecation behavior in the world. According to the Join Monitoring Program (JMP) of WHO / UNICEF 2015, approximately 51 million Indonesian have still been doing open defecation behavior. Based Health Research in 2013 (RISKESDAS) West Nusa Tenggara is the second province that has the largest number defecation in Indonesia. (Dinas Kesehatan Kabupaten Lombok Barat 2012), there was 52.48% of people have already used family latrines as places to defecate (BAB), 27.21% still used the river and the surrounding environment as a place to defecate. Open defecation behavior affects sanitation issues such as diarrhea, as shown by the data of the West Lombok Department of Health 2014, the incidence of diarrhea at Puskesmas Sedau West Lombok was extremely high with 1036 inhabitants.

The interview data conducted by Ahmad Hazrul Watoni on 29 September 2016 in children aged 7-12 years who live in Merca, Selat Village, where it was on of Puskesmas Sedau area, showed that there were 11 out of 20 people have defecation habit in the river even though 7 out of 11 children had latrines in their house, while the remaining has already used toilet. Those 11 people were from parents whose education in junior high school. According to research results, (Qudsiyah WA; Pujiati, RS; Ningrum 2015) explain that quality of latrine does not affect a person to defecate in latrines, this is caused by their habit that they are more comfortable to defecate in the river. Infrastructure is an enforcing factor for behavioral change, but the most dominating factor is the habit.

Theory of Transcultural Nursing with Sunrise model of (Leininger 2002) consists of

seven factors influencing the belief and practice of the individual or cultural group. It affects specific and universal nursing practice to health and welfare of the individual or cultural group (Leininger 2002) so that it can be used as a template to observe the factors relating to the behavior of open defecation. Various problems from these conditions will relate to the behavior of open defecation in children.Therefore researcher is interested in doing research on "Analysis of Factors Related to Open Defecation Behavior based on Theory of Transcultural Nursing at Children in Merca, Selat Village, West Lombok".

METHOD

This research design uses descriptive with cross sectional approach. The population in the study were all parents with school-aged children (7-12 years) in Merce, Selat village, Sedau Community Health Center area. In this study, the researcher used simple random sampling technique and obtained a sample of 95 respondents. Independent variables in this research are parent education, cultural values and lifestyle, social and family value, religiosity, and technology, while the dependent variable is open defecation behavior in school age children.

Data collection using questionnaire and implemented for three weeks in December 2016. Analysis of data used to determine the relationship factors associated with open defecation behavior is to use Spearman rho test.

RESULTS

Over half of respondents graduated from secondary education. It means education pursued by respondents were still lacking. Education has a significant relationship with open defecation behavior in children (Table 1).

Based on Table 2, the majority of respondents had a low economy status which was below the minimum wage of Lombok Barat (<1,500,000), these results indicate a significant relationship between economic status and open defecation behavior of school-aged children.

Table 1. The relationship between parent's education and parent's behavior about open defecation to school age children

Open Defecation Behavior	Education											
	Did not attend school		Elementary school		Junior high school		Senior High School		College		Total	
	∑	%	∑	%	∑	%	∑	%	∑	%	∑	%
Do not do	0	0	1	1.1	19	20	18	18.9	6	6.3	44	46.
Do	4	4.2	10	10.5	31	32.6	5	5.3	1	1.1	51	53.
Total	4	4.2	11	11.6	50	52.6	23	24.2	7	7.4	95	100
p = 0.000, r = 0.390												

Table 2. The relationship between economic background and open defecation behavior in school age children

Behavior Open Defecation	Economic					
	≤1500000		**≥1500000**		**Total**	
	Σ	%	Σ	%	Σ	%
Do not do	22	23.2	22	2 3.2	44	46.3
Do	40	42.1	1 1	11.5	51	53.7
Total	62	6 5.3	33	3 4.7	95	100
p = 0.003 , r = 0.298						

Table 3. The relationship between cultural value and lifestyle and open defecation behavior in school age children

	Cultural Value and Lifestyle					
Open Defecation Behavior	Negative		Positive		Total	
	Σ	%	Σ	%	Σ	%
Do not do	11	11.5	33	34.8	44	46.3
Do	41	43.2	1 0	10.5	51	53.7
Total	52	54.7	43	45.3	95	100
	p = 0.00, r = 0.555					

Table 4. The relationship between social and family value with open defecation behavior in school age children

	Social and Family Value					
Open Defecation Behavior	Negative		Positive		Total	
	Σ	%	Σ	%	Σ	%
Do not do	9	9.5	35	36.8	44	46.3
Do	33	34.7	18	19	51	53.7
Total	42	44.2	53	55.8	95	100
	p = 0.00, r = 0.444					

Table 5. Distribution of respondents by cultural value and lifestyle of parents associated with open defecation behavior in school age children

Open Defecation Behavior	Religiosity							
	Good		Moderate		Less		Total	
	∑	%	∑	%	∑%		∑	%
Do not do	44	46.3	0	0	0	0	44	46.3
Do	51	53.7	0	0	0	0	51	53.7
Total	95	100	0	0	0	0	95	100
	p = 0.000, r = 0.300							

Table 6 The Relationship between Technological factors and Open Defecation Behavior of school age children

Open Defecation Behavior	Technology							
	Good		Moderate		Less		Total	
	∑	%	∑	%	∑%		∑	%
Do not do	34	35.8	8	8.5	22.1		44	46.3
Do	23	24.2	14	14.7	14	14.7	51	53.7
Total	57	60	22	23.2	1616.8		95	100
	p = 0.000, r = 0.354							

According to the table 3, more than half of the respondents had negative cultural value and lifestyle. The relationship level between cultural value and lifestyle and open defecation behavior high was. This shows that the habit of open defecation was still very high.

The relationship level between social and cultural value and parent's behavior was moderate (Table 4), this indicates that the value of social and family supported hygienic and healthy behavior, especially Open Defecation was still very good.

According to Table 5, the majority of respondents had a good value to religiosity and level of religiosity with the behavior of open defecation was moderate. This shows that the people believe in their religion teach to maintain good hygiene.

The majority of respondents had a good Technology. The relationship level of technology with the behavior of open defecation was moderate (Table 6). This shows that the technology available has been good to support the behavior of the positive open defecation.

DISCUSSION

Based on the data showed that the majority education of respondents was junior high school. This indicates that respondents were less educated. Therefore, there is correlation proved by the test Spearman Rho between education and the parental behavior of open defecation.

Education is an important thing, high education is expected to make a person always to carry out the things that are important to themselves and those around them (Mahyudin, 2013). According to the theory of Leininger's Transcultural Nursing (2002) states that a healthy behavior is shaped by a variety factors that work together. The higher education, the wiser that person is understanding everything around them because they usually look for scientific evidence and rational mind. It makes easier to adapt culturally as well as their health condition. Formal education of mother is the impact of mother's knowledge which low education leads to be less education and vice versa. Knowledge is an important domain for the person's actions (Kharismawati 2014).

Respondents who studied high school and college also had the negative open defecation is caused by lack of knowledge and information in the use of a healthy toilet.The society's knowledge was high but still behave open defecation although already have their own latrines as defecating. It indicates that public's knowledge about healthy latrine is still lacking (Widowati 2015) and the participation of the family in the use of latrines is still lacking (Tarin, 2008). Also, well-educated parents usually have many activities outside, so they will leave their children (Syaltut 2016)(Syaltut 2016) so that the children is handed over to grandmother or neighbor. Thus, children are rarely given the knowledge of the proper place and manner of defecation to keep hygiene.

Education is an important factor for people to behave maintaining the health of family, but it will be useless if it is not accompanied by awareness and willingness to make changes and improvements in the family environment, as well as respondents with high education, such as graduated from high school and college,they do not build their own latrines for house because their house is close to the river without a septic tank.

The most respondents were less economic, which was under minimum wage of West Lombok (<1,500,000). Respondents who earned below minimum wage had negative open defecation behavior, so the Spearman rho indicates the relationship between the economic and parental behavior of open defecation children. The level of the relationship was a moderate level category. Family income determines the availability of good family health. A balance family income will affect in maintaining the cleanliness and provision of a health facility. So people with low income cannot afford good health facility because they are difficult in providing it (Ministry Of Health, 2006). Theory of Transcultural Nursing (Leininger 2002) explains that someone will take advantage of material resources owned to pay its pain to get well soon.

Widowati (2015) found that income is a factor associated with health program, which means people with sufficient income will defecate in latrines while others with low income mostly do open defecation in greater number than high income. Statistically, there is a significant relationship between income and open defecation behavior. A respondent with low income was likely to have 9500 times risk more than respondents with high income.

However, there were respondents with a good economy doing open defecation behavior.This is caused by several factors encouraging them to do open defecation, which was people living near the river were more at risk to defecate in the open area (Mukherjee 2011). Another study mentioned that the distance between home and the river affects 132 times not to build latrine (Salah, 2002). Another factor that could reduce the

influence of technology is culture open defecation in the community because they felt defecation be more convenient and practical, open defecation as community identity and inheritance - generation of the ancestor so that it becomes a habit (Murwati 2012).

Low economy status strongly supports the behavior of open defecation because people will set a priority on another need which is more fundamental than building their own latrines especially if the distance from the house to the river near. Moreover, limited of land-owner makes difficult to build latrines so awareness for has a healthy family latrine will be less.

Most respondents had the negative value of cultural and lifestyle, among them, there were people with negative behavior of open defecation. There was a significant relationship between the test Spearman Rho between cultural value and lifestyle and the parental behavior of open defecation children. The level of a relationship was high. Based on research (Qudsiyah WA; Pujiati, RS; Ningrum 2015), the behavior of open defecation is closely connected with the cultural factor that becomes a habit in daily life, they feel more comfortable if defecate in the river while facility and infrastructure are enforcing factor to change behavior, but the most dominating factor is the habit.

The tribe characteristics can be described by the tradition and culture which is formed in settlement and their local wisdom. It can be seen from the traditional settlement of Sasak Tribe, in Limbungan, East Lombok, who maintain their traditional house from any changes. The pattern of spatial development of the Sasak tribe in Limbungan is based on cosmology value-oriented with the belief system and tradition of culture-based society resulting in special space. Custom regulations about the settlement of indigenous Limbungan that if you want to build a permanent house, you should build outside the area neighborhood of custom, it is forbidden to alter and damage the residential custom, location, natural materials of the building, all of this should be in accordance with the custom rules, especially it is not allowed to build bathroom/toilet in custom residential neighborhood that washing activities carried out in the river (Sabrina, R., Antariksa, A., & Prayitno 2010).

Attitude and behavior of people who does not maintain environmental health have an impact on their next-generation behavioral patterns. Cultural elements learned in the early stages of the process of socialization are a habit formed since childhood. It will affect the habit of a person as an adult (Koentjaraningrat 2004).

Community with high cultural value will follow their tradition of the past and feel comfortable when they are in situation and condition where the present and the future can be predicted or have a secure while community with low cultural value will remain comfortable even if they are in a situation that is uncertain in the present and future, therefore they are not too oriented to regulation and better prepared to face the changes (Imelda 2002).

Based on Transcultural nursing theory Leininger (2002), the value of culture is defined and determined by the adherents of culture considered as good or bad. One of the factors that determine the health condition of the community is the people's health behavior itself, where several factors influence the process of formation of this behavior. Its factor socio-cultural factor, if these factor has been embedded and internalized in the life and activity of the community the tendency to change behavior been formed is difficult to do (Imelda 2002).

The value of the negative culture associated with a parental behavior of open defecation would be inherited by their children and will continue to inherit if the parents do not change a value of culture to be positive because children will imitate whatever is done by family environment.A custom which has been learned from childhood by family is a difficult thing to be changed because people prefer their lives as usual and trying to keep things comfortable so that the relationship between culture and parental behavior of open defecation to children were high.

Most respondents have good social value and family. It indicates there was the relationship between social value and family and parental behavior of open defecation to children. The level of the relationship was moderate.

Transcultural nursing by Leininger (2002), Social &family aims to be a support system for member and to improve health and

the adaptation process. Social and family supports the family's ability to provide time, attention, and support to meet the physical, mental, and social. There are three dimensions of family support such as emotional support, material support, informative support. Social and family factor have an important role in the medical management not only for children but also for the adult who can affect behavior.

There were 18 people who have positive social value and family doing open defecation. Low parental supervision can cause this behavior. Low family care causes parents had a negative characteristic in determining the way to care children (Syaltut 2016).

Parental care of children affects the care for children and forms of a family also affects parental attention to children. According to Feiring and Lewis (1984) in Friedman (2010), there is strong evidence that large family and small family qualitatively describe the experiences of development. Children who come from small family receive more attention than children from large family so that it becomes a factor supporting the behavior to do open defecation by children

Negative social and family factors are they rarely teach defecation in latrines since childhood. It means that family social factors still bound by habit, custom, and belief of the family, causing the children’s behavior to follow the custom in a family. A family is the closest neighborhood where children can imitate whatever the family does.Not only does negative social and family factor encourage someone to do open defecation but also the society with positive value still do conduct open defecation because of parental attention that can be caused by large family and defecation habit.

The majority of respondents had good religiosity on the behavior of open defection.There is a relationship based on the test Spearman Rho between religiosity and parental behavior of open defecation children. The level of relationship's category was moderate. Religion is a symbol which makes people very realistic. Religion gives strong motivation to put the truth above others, even its life. Religion causes the person to have humility and opening (Leininger, 2002).

Religiosity is a core of human life. High religiosity is described by their belief in the existence of God as manifested in the process of studying knowledge and behavior by its religion. The behavior of obeying what is ordered and disobeying what is forbidden by the religion will make human closer to God, the sense that prayers are being said is always granted, a sense of calm, and so on. So that, the daily activity of individual truly reflects the teaching of religion (Purnamasari 2014).

In this study, all respondents had a good rate of religiosity, but some of them were a negative behavior of open defecation by 51 respondents (53.7%). People who did proper defecation is caused by the religiosity because it led to the observance of obligations as religious people and always maintain personal hygiene but still had to defecate in private place. It is affected by a habit of family and community in the understanding of open defecation inappropriate.

Mostly, respondents owned good technology, but among them, there still had the negative value of behavior open defecation. It showed that there was correlation bySpearman Rho between technology and parental behavior of open defecation to children with a moderate level category.

According to the theory of Transcultural Nursing by Leininger (2002), technology is a factor that influences individual behavior based on culture. Health technology is the infrastructure that allows individual to choose or get a bid to solve health care problem. Utilization of health technology is influenced by the attitude of health worker, the needs, and public interest (Giger 2013). Technology refers to all forms of technology used for creating, saving, modifying, and using information.

There were respondents who had good technology but did the behavior of open defecation, it means that the influence of technology on the behavior of open defecation could also be less influence if there were other factors explained on qualitative research (Mukherjee 2011), people living near the river are likely to defecate in the open area. Another study mentions that the distance between home and the river affects 132 times not to use latrine (Salah, 2002). Another factor that could reduce the technology's role was culture. The culture of open defecation in the open area makes people think that it is easier and simple, this defecation habit is community identity and inheritance - generation of the ancestor so that it becomes a habit (Murwati 2012).

The technology referred to in this research is health education about open defecation or a healthy family latrine and latrine ownership that meets the health requirements of the respondents. Respondents had had latrine but there were still many people who have not qualified healthcare equipped with septic tanks or have toilets and the lack of information about the benefits to defecate in latrines for health so that respondents still went to the river.

CONCLUSION

Parental education background factor, economic background, cultural value and lifestyle, social value and family, religiosity and technology is related to open defecation behavior in school-aged children. Further research is expected to provide the intervention of the factors that influence open defecation behavior to children, especially on factors such as cultural value and lifestyle of parents, social and family value.

REFERENCES

Dinas Kesehatan Kabupaten Lombok Barat, 2012. *Profil Kesehatan Kabupaten Lombok Barat Tahun 2012*, Lombok Barat: Dinas Kesehatan Kabupaten Lombok Barat.

Friedman, 2010. *Buku ajar keperawatan keluarga : Riset, Teori dan Praktek*, Jakarta: EGC.

Giger, J. dan D., 2013. *Transcultural Nursing: Assesmentand Intervention*, Canada: Mosby.

Imelda, S., 2002. *Faktor Sosial Budaya yang Mempengaruhi Perilaku Kesehatan Masyarakat Menuju Paradigma Sehat di Kota Padang*. Universitas Indonesia.

Kharismawati, E., 2014. *Analisis Faktor Pemberian Asi Eksklusif Pada Bayi Berdasarkan Teori Perilaku Who Di Wilayah Puskesmas Mulyorejo Surabaya*. Universitas Airlangga.

Koentjaraningrat, 2004. *Manusia dan Kebudayaan di Indonesia*, Jakarta: Djambatan.

Latifah, F., 2012. *Hubungan Karakteristik Anak Usia Sekolah Dengan Kejadian Bullying Di Sekolah Dasar X Di Bogor*. Universitas Indonesia.

Leininger, M., 2002. Culture Care Theory: A Major Contribution to Advance Transcultural Nursing Knowledge and Practices. *Journal of Transcultural Nursing*, 13(3), pp.189–192. Available at: http://journals.sagepub.com/doi/10.1177/10459602013003005 [Accessed May 27, 2017].

Mukherjee, N., 2011. *Factors Associated with Achieving and Sustaining Open Defecation Free Communities Learning from East Java, Water and Sanitation Program.*, Washington, DC.

Murwati, M., 2012. *Faktor Host Dan Lingkungan Yang Mempengaruhi Perilaku Buang Air Besar Sembarangan/(Open Defecation)*. Undip.

Purnamasari, S., 2014. *Religiusitas Pada Remaja Ditinjau Dari Minat terhadap Musik Islami, Pop dan music Metal*. Universitas Muhammadiyah Surakarta.

Qudsiyah WA; Pujiati, RS; Ningrum, P., 2015. *Faktor-Faktor Yang Berhubungan Dengan Tingginya Angka Open Defecation Di Kabupaten Jember*. universitas jember. Available at: http://repository.unej.ac.id/bitstream/handle/123456789/61805/Wahyu Afiatul Qudsyah92110101101_1.pdf?sequence=1 [Accessed December 16, 2016].

Sabrina, R., Antariksa, A., & Prayitno, G., 2010. Sabrina, R., Antariksa, A., & Prayitno, G. (2010). Pelestarian Pola Permukiman Tradisional Suku Sasak Dusun Limbungan Kabupaten Lombok Timur.

Syaltut, M., 2016. *Analisis Faktor Pemberian Mp-Asi Dini Pada Bayi Usia 0-6 Bulan Berdasarkan Teori Transcultural Nursing Di Puskesmas Proppo Pamekasan*. Universitas Airlangga.

Widowati, N.., 2015. *Hubungan Karakteristik Pemilik Rumah Dengan Perilaku Buang Air Besar Sembarangan Di Wilayah Kerja Puskesmas Sambungmacan II Kabupaten Sragen*. Universitas Muhammadiyah, Surakarta.

BULLYING BEHAVIOUR OF ADOLESCENTS BASED ON GENDER, GANG AND FAMILY

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ABSTRACT

Introduction: Bullying is a social problem which is characterised by aggressive violent behaviour done continuously and has an adverse impact on victims and its subject and happens at school. This study aims to find out the description of knowledge and adolescents' behaviour with regard to bullying based on their age, gang and family. **Methods:** This study used an analytic descriptive design with some samples – 246 adolescents from grade 1, 2, and 3 of senior high school which used stratified random sampling. Instruments of this study were a knowledge questioner and a modified version of The Bullying Prevalence Questionnaire in Guttman and Likert scale. Data analysis used cross tabulation. **Result:** Data show that adolescents have a good knowledge (93.9%) of bullying and less (6.1%). Bullying subjects were 93.9% and victims 94.7%. Forms of verbal bullying indicated the subjects (93.1%) and victims (92.3%). The majority of bullying subjects were males (94.1%), and the majority of victims were women (96.3%). Numbers of bullying subjects do not have a gang (94.5%), while those with a gang as victims (95.2%). There were five adolescents who live in stepfamilies who became subjects and victims of bullying. **Conclusion:** The majority of adolescents have good knowledge about bullying, the vast majority of cases of bullying were verbal bullying with subjects and victims of bullying occurring in all classes. The majority of bullying subjects do not have a gang, and the majority of victims have a gang. Almost all adolescents with different family types become subjects and victims of bullying. Therefore, an intensive educational and spiritual effort needs to be made to change the behaviour of adolescents so that they are adolescents with good character.

Keywords: Bullying, gender, gang, family.

INTRODUCTION

Bullying behaviour is a social problem that is part of the violent behaviour done aggressively with discrete hurt either physically, verbally, psychologically, through an intermediary and without an intermediary, violating the rights, the power difference between perpetrator and victim and which is repeatedly performed (Lai, Ye, & Chang, 2008). In recent years, the phenomenon of bullying has become a source of concern all over the world and it is constantly increasing and significantly mainly occurring in children and adolescents, especially at school age (Lai et al., 2008).

The World Health Organization (2012) reported that the health behaviour of school-age children in Europe ranges from 2% to 27% of girls becoming victims of bullying, and 5% to 32% of boys. According to statistics on bullying, the data also demonstrates that 70.6% of students in the United States (US) have watched bullying in their schools and more than 30% of students reported experiencing bullying (Bullying Statistic, 2015). Moreover, according to data from the National Center for Education (NCE) (2007), approximately 3.2 million youth aged 12–18 have reported experiencing some form of bullying, and more than 160,000 children missed school every day because of trauma as a result of the terror received in school (Santoyosep, 2013). According to Cokokinarto et al. (2013), cases of bullying that occur in Indonesia, including in the order of 2 ads highest in the world after Japan, followed by Canada and the US. This is also supported by the number of reports from the public to the Indonesian Child Protection Commission (KPAI) against bullying cases from 2011 to August 2014; there were 369 complaints which are about 25% of the total complaints in the field of education which has as many as 1480 cases (Setyawan, 2014).

The results of the study of the National Consortium Characters in the School Development Firmansyah (2014), showed that almost all schools in Indonesia experienced bullying. Based on this, the study stated that Indonesia was categorised as an emergency for bullying in schools. According to Edwards (2006) in Usman (2013), bullying is most common in high school because adolescence has a high level of egocentrism. Based on a survey conducted on 40 students of class XII in one secondary school (high school) in the city of Semarang, 32.5% of students had been a subject, victim, or witness of bullying; 27.5% had been a witness only, 10% were victims and

witnesses; 7.5% were subjects or witnesses; and 25% were the subject of bullying alone (Sugiariyanti, 2009).

According to Soedjatmiko, Nurhamzah, Maureen, & Wiguna) (2013), most victims of bullying will experience a negative impact in the form of barriers to actualising themselves, mental disorders and psychosocial disorders. This is because students feel they are in a state of distress, danger or insecurity and comfortable, have a sense of worthlessness, difficulty concentrating, find it difficult to socialise within their environment, have poor self-esteem, depression which affects academic performance and can even lead to suicide (Sejiwa, 2008). One of the effects of bullying is a decrease in the level of achievement in school. This is evidenced by the results of research by Dwipayanti & Indrawati (2014), that the higher the bullying experienced by victims of bullying, the lower the academic achievement.

Research on students 'knowledge about bullying', especially in the area of Makassar South Sulawesi has not been done, while the students' knowledge is very influential in bullying behavior before further action. Some studies say that to solve a case of bullying, the intervention must be carried out with the perpetrators and the victims. Effectiveness depends on the participants' knowledge, empathy, and adherence to the intervention (Chatters, 2012). Based on interviews with three students of SMA Negeri 1 Tanete Rilau, it was found that violence is very common, especially during student orientation periods (MOS) occurring between seniors and juniors. Also, the Coordinator of Counseling (BK) said that violence has occurred from year to year and the data recorded that several students had been threatened with expulsion from school. This study aims to describe the knowledge and behaviour of adolescents' bullying based on gender, gang and family.

METHODS

The study design is descriptive analysis with cross tabulation between the variables gender, having a gang and type of family with adolescent bullying behaviour. Research was conducted at SMAN 1 Tanete Rilau, District Tanete Rilau, Barru, South Sulawesi in October–November 2015. The population in this study were all adolescents in the 1st, 2nd, and 3rd grade of senior high school (SMA Negeri 1 Tanete Rilau). In the 2015–2016 school year, there were 638 adolescents, with a sample of 246 adolescents selected by using a stratified random sampling technique. The samples for each class were obtained by selecting students who have an odd number on their student identification in each class. The inclusion criteria were teens at a research site for the study with a signed informed consent sheet.

The variable in this study concerning the knowledge of adolescents about bullying included definitions, characteristics, causes, impacts and forms of bullying consisting of verbal bullying, physical, psychosocial/mental, and cyberbullying; variable bullying behaviour can be identified as subjects and victims of bullying, obtained from respondents through a modified version of The Bullying Prevalence Questionnaire (physical, verbal, psychological/ mental and cyber), gender variable, gang variable, and family variable in terms of the biological family (living with parents and siblings), stepfamilies and non-biological families.

The instrument used in this study was to test the validity and reliability of knowledge about bullying including a questionnaire with the value of Cronbach's Alpha equalling 0.959 and a Corrected item-Total Correlation > r table (0.361), with 12 questions using the Guttman scale; The Bullying Prevalence Questionnaire was modified by researchers with the value of Cronbach's Alpha equalling 0.921 and Corrected item-Total Correlation> r table (0.361), with 32 questions containing subjects and, for victims of bullying, using a Likert scale; and biodata respondents.

The data were processed and analysed descriptively and presented in a frequency distribution table. Furthermore, bullying behavior was analysed in cross tabulation with the variables gender, gang and family type.

RESULTS

The frequency distribution based on the characteristics of the respondent can be seen in Table 1, based on the knowledge and behaviour of bullying in Table 2, and forms of bullying in Table 3. Table 1 shows that most respondents were female adolescents (65.4%), in grade 3, totalling 87 (35.4%), and only 63 respondents

Table 1. Frequency Distribution of Respondents by Gender, Class, Gang and Family type (n= 246)

Characteristics of Respondents	n	%
Gender		
Male	85	34,6
Female	161	65,4
Grade		
I	81	32,9
II	78	31,7
III	87	35,4
Having Gang		
Yes	63	25,6
No	183	74,4
Family Type		
Biological Family	203	82,5
Step Family	5	2
Non-Biological Family	38	15,4

Table 2. Frequency Distribution of Respondents by Knowledge and Bullying Behaviour (n = 246)

Knowledge	n	%
Good	231	93,9
Not Good	15	6,1
Behaviour		
Doing Bullying	231	93,9
Not Doing Bullying	15	6,1
Victims of Bullying	233	94,7
Not Victims of Bullying	13	5,3

Table 3 Frequency Distribution of Respondents by Forms of Bullying

	Subjects	Victims
Form of Bullying	%	%
Subjects of Physical	74	83,7
Non-Subjects of Physical	26	16,3
Subjects of Verbal	93,1	92,3
Non-Subjects of Verbal	6,9	7,7
Subjects of Psychosocial/ Mental	73,6	67,4
Non-Subjects of Psychosocial	26,4	32,6
Subjects of Cyber Bullying	24,7	28,3
Non- Subjects of Cyber Bullying	75,3	71,7

had a gang. The majority of respondents lived with a biological family, namely 203 adolescents (82.5%).

Table 2 shows that the majority of the 246 respondents had a good knowledge of bullying – 231 adolescents (93.9%). While the number of bullying subjects was 231 adolescents (93.9%) and 233 adolescents (94.7%) as victims of bullying. Table 3 shows that of the 231 bullying subjects, as many as 74% (171 adolescents) did the physical bullying, 93.1% (215 adolescents) did the verbal bullying, 73.6% (170 adolescents) did the bullying psychosocially/ mentally, and 24, 7% (57 adolescents) did cyber bullying. From the 231 respondents who became bullying subjects, there were some adolescents who became actors in more than one form of bullying. Of the 233 victims of bullying, as many as 83.7% (195 adolescents) were victims of physical bullying, 92.3% (215 adolescents) were victims of verbal bullying, 67.4% (157 adolescents) were victims of bullying psychosocially/mentally, and 28.3% (66 respondents) became victims of cyber bullying.

Cross tabulation results of subjects and victims of bullying based on gender are shown in Table 4, having a gang in Table 5, and the type of family in Table 6. Table 4 shows that

Table 4. Frequency distribution of subjects and victims of bullying by sex (n=246)

Sex	Subjects	Non Subjects	Victims	Non Victims
	%	%	%	%
Male	94,1	5,9	91,8	8,2
Female	93,8	6,2	96,3	3,7

Table 5.Frequency distribution of subjects and victims of bullying according to gang group (n=246)

Gang Group	Subjects	Not Subjects	Victims	Non-Victims
	%	%	%	%
Having Gang	92,1	7,9	95,2	4,8
Non-Having Gang	94,5	5,5	94,5	5,5

Table 6. Frequency distribution of subjects and victims of bullying by family type (n=246)

Family Type	Subjects	Not Subjects	Victims	Non-Victims
	%	%	%	%
Biological Family	92,6	7,4	94,1	5,9
Step family	100	0	100	0
Non-Biological Family	100	0	97,4	2,6

the distribution of bullying behaviour by gender of 85 male adolescents showed 80 bullying subjects (94.1%) and victims amounting to 78 adolescents (91.8%). While the teenage girls' category of bullying subjects showed 151 (93.8%) and the category for victims included 155 (96.3%) of 161 girls.

Table 5 shows the distribution of bullying behaviour by gangs amongst 63 adolescents who have a gang, with categories of bullying subjects numbering 58 (92.1%) and the victims numbering 60 adolescents (95.2%). Amongst the 183 adolescents who did not have a gang, numbers of bullying subjects as well as victims were respectively 173 adolescents. (94.5%).

Table 6 shows that the distribution of bullying behaviour by family of 203 adolescents who live with their biological families, included 188 bullying subjects (92.6%) and 191 victims (94.1%). There were five adolescents who lived with stepfamilies, showing that all adolescents (100%) became bullying subjects or victims of bullying, while 38 adolescents lived with no biological family, and all of these adolescents (100%) became bullying subjects and 37 adolescents were victims (97.4%).

DISCUSSION

Data shows most adolescents have good knowledge about bullying. This is in line with research by Fajrin (2013) which shows a high percentage in terms of student knowledge about bullying at SMK PGRI Semarang. Knowledge of bullying is very closely related to the information that has been obtained by respondents from various sources. One source of information that is important for this knowledge is the mass media. Also, information can be derived from a teacher through the learning process. Based on Notoatmodjo (2010), people who have more resources will have a broad knowledge. Adolescent knowledge is based on indicators of knowledge about the definition of bullying, the characteristics of bullying, forms of bullying, bullying causes and effects of bullying. The results of the evaluation questionnaire on each question showed that more than half of the respondents answered wrongly the question about the forms of bullying. This could have been caused by information obtained by adolescents that bullying is confined in general to a form of violence. However, adolescents' information about forms of bullying is still lacking.

Bullying is a problem that occurs among children and adolescents and continues to receive attention from researchers. Based on the results of the categorisation of subject scores of subjects and victims of bullying it is known that as many as eight adolescents very often become bullying subjects, often (14 adolescents) and sometimes become subjects (80 adolescents). While very often the victim

of bullying as much as 7 adolescents, often (20 adolescents) and 81 adolescents sometimes become victims of bullying. Thus, it shows that adolescents sometimes become subjects and victims of bullying. This is according to research conducted by Usman (2013) which indicates that the student encounters moderate bullying behaviour . But keep in mind also the subjects and victims of bullying in the category very often will have an impact on their adolescent psychology. This is supported by research KPAI (2013) which recorded 181 cases of bullying that led to a death. One of them is the case of a child aged 13 years in Bekasi who committed suicide in 2005 triggered by a sense of inferiority and frustration because he was often derided as a son of a chicken porridge seller by his school friends (Sari, 2015).

Results of identification about forms of bullying found that the highest form of bullying is verbal bullying. This was according to research conducted by Olweus (1994) and Kshirsagar (2007) in Nurhamzah et al. (2013) which said that the form of bullying which most often occurs in schools is verbal bullying. The results of our analysis showed that of 96.5% (223 adolescents who became subjects as well as victims of bullying among other things as much as 87.1% experienced the physical form (149 adolescents), verbal 91.6% (197 adolescents), psychosocial/mental 70,6% (120 adolescents) and cyber bullying 64.9% (37 adolescents). This incident caused by a history of being bullied and to respond with violence also against his friend. In accordance with the theory of Harris & Petrie (2003) the subjects of bullying who also became victims of bullying were adolescents who were bullied, and later also found ways to do the bullying to others as an expression of pleasure, revenge or a wish to be praised.

Bullies in adolescent males made up a higher percentage than girls. This is in line with the results of research by Aluede & Oyaziwo (2006) and research by Magfirah & Rachmawati (2009) which showed that adolescents were more often subjects as well as victims of bullying. The reason why adolescent males tend to be more aggressive psychologically is related to their need to show physical strength and adolescent males are also often exposed to games that have violent elements (Cerni Obrdalj & Rumboldt, 2008). As the victims of bullying, adolescent girls make up a higher percentage than adolescent males. This is consistent with the theory of the Green et al. (2010) and research by Nurhamzah et al. (2013) which said that women were more likely to be bullied than men.

In a gang takes compactness starting of attraction which encouraged him to continue to be a member of the group and met intense and behave in line with the group members are commonly referred to conformity (Leviani, 2008). Research conducted by Nation et al. (2008) amongst 4386 middle school students and high school students from 151 middle and 92 high schools in Italy and the USA found an association between bullying behaviour and peer pressure to be accepted into a group. This study shows different results, with adolescents who do not have a gang making up a higher percentage of bullying subjects, while adolescents with a gang have a higher percentage as the victims of bullying. It can be influenced by several factors, among others, personal factors such as personality, attitudes, genetic predisposition and situational factors in the form of provocation, frustration, and drugs according to Anderson and Bushman (2002) in Usman (2008). In addition, a study reveals that high school students are no longer dependent on the pressures or decisions of their peers to do bullying behaviour, because, at such a time, high school students are able to think objectively about what to do and have increasing values of morality themselves (Eisenberg & Aalsma, 2005).

Several studies have shown that families, especially parents, play an important role in children who commit acts of bullying. Rigby (2005) in a study of middle school students (200 students) and high school students (200 students) in Adelaide in South Australia revealed that bullying behaviour is caused by a lack of support from parents to children to do so and also found that students who did the bullying behaviour come from families with broken homes. The results showed that the respondents who were living with stepfamilies and not biological families all became bullying subjects, even though biological families also showed a high percentage. For the victims of bullying, all the adolescents who lived with stepfamilies became victims of bullying. According to Wiyani (2012), bullying subjects are usually the children of authoritarian parents, with

violent behaviour, or those who are too permissive towards the aggressive behaviour of children. Thus, this study showed that although the respondents live with their biological parents, if they have parents who are authoritarian and often do violent behaviour this will form a distinct personality with respondents who lived with stepfamilies or not the biological parents who are educated without showing violence, so bullying behaviour does not occur. Apart from the family, the cause of bullying could come from the environment, especially the school environment. The school environment can be seen as a community ecosystem that connects between context and individual identity in a balanced manner so that a small change both in attitudes and behaviour at school can affect the behaviour of adolescents.

CONCLUSION

The majority of adolescents have good knowledge about bullying, but most adolescents do not know the forms of bullying. Forms of bullying in adolescents are mostly verbal bullying with subjects and victims of bullying occurring in all classes. The majority of bullying subjects do not have a gang, and the majority of victims have a group. Almost all adolescents with different family types become adolescents and victims of bullying.

The importance of an intensive educational and spiritual effort should be recognised to change the behaviour of adolescents to help them become adolescents with good character and conduct regular monitoring of the students and impose sanctions so that their awareness is raised to always behave well towards their peers.

REFERENCE

Aluede & Oyaziwo. (2006). Teachers' opinions of school counseling programs in Nigerian secondary schools, 33, 42.

Bullying Statistic. (2015). Bullying Statistics, The Ultimate Guide ! |NoBullying|.

Cerni Obrdalj & Rumboldt, M. (2008). Bullying among school children in postwar bosnia and herzegovina: cross-sectional study. *Croatian Medical Journal*, *49*(4), 528–535.

Chatters, S. J. (2012). *Impact of Bullying Prevention Training on the Knowledge, Attitude, and Behavior of Pre-Education Majors (Future Trainers). ProQuest LLC*. University of South Florida.

Cokokinarto, K., Suwasono, A. A., Salamoon, D. K., Petra, U. K. & Cokokinarto, K. (2013). Perancangan Film Pendek Mengenai "Bully ".

Dwipayanti & Indrawati, K. R. (2014). Hubungan Antara Tindakan Bullying dengan Prestasi Belajar Anak Korban Bullying pada Tingkat Sekolah Dasar Ida Ayu Surya. *Jurnal Psikologi Udayana*, *1*(2), 251–260.

Eisenberg, M. E. & Aalsma, M. C. (2005). Bullying and peer victimization: Position paper of the Society for Adolescent Medicine. *Journal of Adolescent Health*, *36*(1), 88–91.

Fajrin, A. N. (2013). *Hubungan Antara Tingkat Pengetahuan Dengan Perilaku Bullying Pada Remaja Di Smk Pgri Semarang*. Universitas Muhammadiyah Semarang.

Firmansyah, T. (2014). Aduan Bullying Tertinggi.

Green, R., Collingwood, A. & Ross, A. (2010). Characteristics of bullying victims in schools. *Religion*, 117. https://doi.org/892d

Harris, S. & Petrie, G. F. (2003). *Bullying: The Bullies, the Victims, the Bystanders*. Texax: Scarecrow Press.

Lai, S.-L., Ye, R. & Chang, K.-P. (2008). Bullying in middle schools: An Asian-Pacific Regional study. *Asia Pacific Education Review*, *9*(4), 503–515. https://doi.org/10.1007/BF03025666

Leviani. (2008). Konformitas dan Bullying pada Siswa. *Jurnal Psikologi*, *6*(1), 1.

Magfirah, U. & Rachmawati, M. A. (2009). *Fakultas Psikologi dan Ilmu Sosial Budaya Universitas Islam Indonesia*.

Nation, M., Vieno, A., Perkins, D. D. & Santinello, M. (2008). Bullying in school and adolescent sense of empowerment: an analysis of relationships with parents, friends, and teachers. *Journal of Community & Applied Social Psychology*, *18*(3), 211–232. https://doi.org/10.1002/casp.921

Notoatmodjo. (2010). *Metodologi Penelitian Kesehatan*. Jakarta: Rineka Cipta.

Nurhamzah, W., Maureen, A. & Wiguna, T. (2013). Gambaran Bullying dan Hubungannya dengan Masalah Emosi dan Perilaku pada Anak Sekolah Dasar,

15(3), 174–180.

Santoyosep. (2013). Bullying Di Sekolah , Cara Pencegahan Dan Penanganannya.

Sari, T. D. (2015). *Aksi Bullying di Kalangan Siswa Sekolah Menengah Atas Wilayah Surakarta Tahun 2014/2015*. Universitas Sebelas Maret.

Sejiwa, Y. S. (2008). *Bullying: mengatasi kekerasan di sekolah dan lingkungan sekitar anak*. Jakarta: Gratisindo.

Setyawan, D. (2014). KPAI : Kasus Bullying dan Pendidikan Karakter, Komisi Perlindungan Anak Indonesia (KPAI).

Soedjatmiko, S., Nurhamzah, W., Maureen, A. & Wiguna, T. (2013). Gambaran Bullying dan Hubungannya dengan Masalah Emosi dan Perilaku pada Anak Sekolah Dasar. *Sari Pediatri*, *15*(3), 174. https://doi.org/10.14238/sp15.3.2013.174-80

Sugiariyanti. (2009). Perilaku Bullying Pada Anak dan Remaja. *Jurnal Ilmiah Psikologi*, 1, 101–108.

Usman, I. (2008). Perilaku Bullying Ditinjau Dari Peran Kelompok Teman Sebaya Dan Iklim Sekolah Pada Siswa Sma Di Kota Gorontalo. *Fakultas Ilmu Pendidikan Universitas Negeri Gorontalo*.

Usman, I. (2013). Kepribadian, komunikasi, kelompok teman sebaya, iklim sekolah dan perilaku. *Jurnal Humanitas*, *10*(1), 50–60.

Wiyani, N. A. (2012). *Save Our Children from School Bullying*. Yogyakarta: Ar Ruzz Media.

World Health Organization (WHO). (2012). Health behavior in school aged children (HBSC) study:International report from the 2009–2010 survey.

PREVENTING MEDICATION ERROR BASED ON KNOWLEDGE MANAGEMENT AGAINST ADVERSE EVENT

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ABSTRACT

Introductions: Medication error is one of many types of errors that could decrease the quality and safety of healthcare. Increasing number of adverse events (AE) reflects the number of medication errors. This study aimed to develop a model of medication error prevention based on knowledge management. This model is expected to improve knowledge and skill of nurses to prevent medication error which is characterized by the decrease of adverse events (AE). **Methods:** This study consisted of two stages. The first stage of research was an explanative survey using cross-sectional approach involving 15 respondents selected by purposive sampling. The second stage was a pre-test experiment involving 29 respondents selected with cluster sampling. Partial Leas square (PLS) was used to examine the factors affecting medication error prevention model while the Wilcoxon Signed Rank Test was used to test the effect of medication error prevention model against adverse events (AE). **Results:** Individual factors (path coefficient 12:56, t = 4,761) play an important role in nurse behavioral changes about medication error prevention based in knowledge management, organizational factor (path coefficient = 0276, t = 2.504) play an important role in nurse behavioral changes about medication error prevention based on knowledge management. Work characteristic factor (path coefficient = 0309, t = 1.98) play an important role in nurse behavioral changes about medication error prevention based on knowledge management. The medication error prevention model based on knowledge management was also significantly decreased adverse event (p = 0.000, α <0.05). **Discussion:** Factors of individuals, organizations and work characteristics were important in the development of medication error prevention models based on knowledge management.

Keywords: Medication error, knowledge management, adverse events (AE)

INTRODUCTION

Medication error is one type of error that gets the most attention effort to improve the quality and safety of healthcare because it can increase the cost of health care in large numbers. Some of the most common medication errors are misconduct, incorrect dosages, and incorrect intervals (FM Hurtsey, 2007). Nurses and other health professionals involved in the Management and Use of Drugs (Medication Management and Use/MMU) have a responsibility to create an environment and working practices that prioritize the patient safety. Medication error is deemed to occur if drug chart of patients showed any of the following: illegible handwriting, medication name and dosage error, medication admission, and access, discharge medication (Wei, Shrestha, Williamson, & Morgan, 2011). Efforts should be made to improve safety in drug delivery include national efforts, education, and training for nurses and system changing (Roterman, 2014).

Studies related to the causes of medication errors have been done and the result shows that lack of knowledge dissemination, especially 22% of the doctors who constitute the cause of error, insufficient information about the patient as well as laboratory data test and possibly the cause of dosing error is 10% does not obey the standard operational procedure and forgot 9% as the cause of medication errors. Another causes related to misreading the prescription, wrong interpretation and abbreviations commands of prescription, misunderstanding verbal commands, confusing the nomenclature of labeling and packaging, wrong storage of medicine, standard and distribution problem, error delivery when purchasing and using drug for example chemotherapy drug infusion, disruption of tension and work environment; unknowledgeable patients (Roterman, 2014).

Based on the report of Hospital Safety Committee in 2010, incidences of medication errors during January-April 2010 reached 16.67%. Nationally, 36% of medication errors occur in the administration phase (Paparella, 2011). In the period of May until August 2010, there was 11.1% incidence of medication errors or third ranks incident after incident errors in clinical procedure and patient falls. The high incidence of medication errors due to patient safety needs serious attention from health professionals, especially nurses who play a role in the administration of drugs

(medical administration). Medication errors can cause serious adverse effect and potentially to evoke the fatal risk of the disease (Perwitasari, Abror, & Wahyuningsih, 2010).

A preliminary study conducted on April 16, 2016, at RSUI Malang found that the number of patients with uncontrollable drug reactions and the medication error in January - December 2015 were 30 cases with the majority of patients are allergic to analgesic, antipyretic and antibiotic drugs. Quality Improvement of Patient Safety Team of RSUI Malang has conducted risk grading including medium risk, simple investigation to the incident at the longest two weeks and the leadership commitment to manage the risk in preventing medication error. From the observation, it is found that there were still errors in drug injection and delivery medication schedule. While on the documentation aspect, the nurse only wrote down the activity of medication that has been done without a report or wrote the patient's response to the medication that has been given.

Medications are classified based on potential risk for medication errors/adverse drug events: high risk, moderate risk and low risk (Swinkey & Manthey, 2001; Zafar, 2007). Adverse event occurs due to the negligence of the nurse and medication errors. This fault happens because of high workload and a high number of inpatient. Knowledge management in the institution to organize knowledge and facilitate employee to access information so that employees are informed and can apply it and affect employee performance. Most knowledge can be obtained from some factors that include education, experience themselves or other people, the mass media and the environment. Domain knowledge is very important for the formation of a person's behavior (W. Maalej, 2013). To prevent adverse event cause of medication error, The supportive strategies for improving perception for the use of IT-based systems would add to system construction, and positive error management climate would be more easily promoted (Kim, 2012)

Knowledge management approach will be used in the prevention of medication errors (Gasik, 2011). Knowledge management according to Gasik (2011) is a development of the concept of knowledge management by Nonaka and Takeuchi (1995). Knowledge management has 7 stage, there are identification; knowledge acquisition, knowledge creation, knowledge application, knowledge transfer, knowledge sharing, knowledge documentation. The advantages of this model are on the data processed through collecting, classifying and grouping, so that it changes the shape and nature of their intended use, interpret the data, data storage, data delivery to the user, and its usefulness in supporting the interests of the organization. This model is based on the traditional model of quality and excellence so that there is a very strong relationship between knowledge management processes and organization with the expected results. The role of knowledge management as a whole is positioned as a tool that helps organizations to achieve the goal. Knowledge management approach is the concept of managing knowledge that has been established to be applied to practice by the knowledge that has been gained and reflected in the performance of a nurse so that unexpected events related to the administration of drugs can be minimized.

METHODS

The first stage was explanative survey using cross-sectional and second stage was pre-experiment, the purpose was to prepare a model of medication error prevention-based on knowledge management model including to raise strategic issues of nurses. Respondents in the first stage are 31 nurses in the ICU, Firdaus and Mina rooms which selected by purposive sampling. The purpose of the second stage was a trial of medication error prevention-based model of knowledge management against unexpected events. Data were collected using questionnaires, observation and analyzed by using Partial Least Square (PLS). PLS results and strategic issues then lifted into the Focus Group Discussion (FGD) with the aim to develop a medication error prevention module-based knowledge management. Participants of FGD were 15 respondents consists of team Patient Safety, Nurse Unit Manager (NUM), the nursing committee selected by purposive sampling. Nurses implemented a module that resulted by FGD in the second stage of research. Respondents of the second stage are 29 in room Safa - Marwah, Mumtazah and Arofah which collected by using cluster sampling. Respondents of the second phase were observed in implementing the module of

medication error prevention - based on and the data were analyzed using the Wilcoxon Signed Rank Test

RESULTS

The results of the first stage described the causes of medication error (individual factors, organizational factors, job characteristic) and prevention of medication error based on knowledge management to the adverse event management (assessment, planning, implementation, evaluation). The distribution of respondents' answers can be seen in table 1 and table 2.

Table 1 shows the cause of medication error including individual factors, organizational factors, and respondent's work characteristic.

Table 1. Distribution Causes of Medication Error

No	Indicator	Good f (%)	Moderate f (%)	Low f (%)	Total f (%)
Individual Factors					
1	Knowledge	0	24 (77%)	7 (23%)	31 (100%)
2	Ability and skill	0	31 (100%)	0	31 (100%)
3	Psychological	0	30 (97%)	1 (3%)	31 (100%)
Organizational Factors					
1	Organizational Comitment	1 (3)	30 (97)	0	31 100%)
2	Structur & Organizational culture	0	27 (87%)	4 (13%)	31(100%)
Respondent's Work Characteristics					
1	Objective performance	0	31 (100%)	0	31 (100%)
2	Feedback	7 (23%)	24 (77%)	0	31 (100%)

Tabel 2. Prevention of medication error based on knowledge management

Indicator	Category			Total
	Good f (%)	Moderate f (%)	Low f (%)	
Assessment				
Knowledge identification	-	23 (74%)	8 (26%)	31 (100%)
Knowledge application	1 (3%)	26 (84%)	4 (13%)	31 (100%)
Knowledge Sharing and Transfer	2 (6%)	17 (55%)	12 (39%)	31 (100%)
Knowledge repository	0	27 (87%)	4 (13%)	31 (100%)
Intervention				
Knowledge identification	-	25 (81%)	6 (19%)	31 (100%)
Knowledge application	-	29 (94%)	2 (6%)	31 (100%)
Knowledge Sharing and Transfer	5 (16%)	21 (68%)	5 (16%)	31 (100%)
Knowledge repository	1 (3%)	22 (71%)	8 (26%)	31 (100%)
Implementation				
Knowledge identification	-	30 (97%)	1 (3%)	31 (100%)
Knowledge application	-	31 (100%)	-	31 (100%)
Knowledge Sharing and Transfer	2 (6%)	26 (84%)	3 (10%)	31 (100%)
Knowledge repository	2 (6%)	21 (68%)	8 (26%)	31 (100%)
Evaluation				
Knowledge identification	2 (6%)	21 (68%)	8 (26%)	31 (100%)
Knowledge application	-	25 (81%)	6 (19%)	31 (100%)
Knowledge Sharing and Transfer	2 (6%)	20 (65%)	9 (29%)	31 (100%)
Knowledge repository	4 (13%)	22 (71%)	5 (16%)	31 (100%)

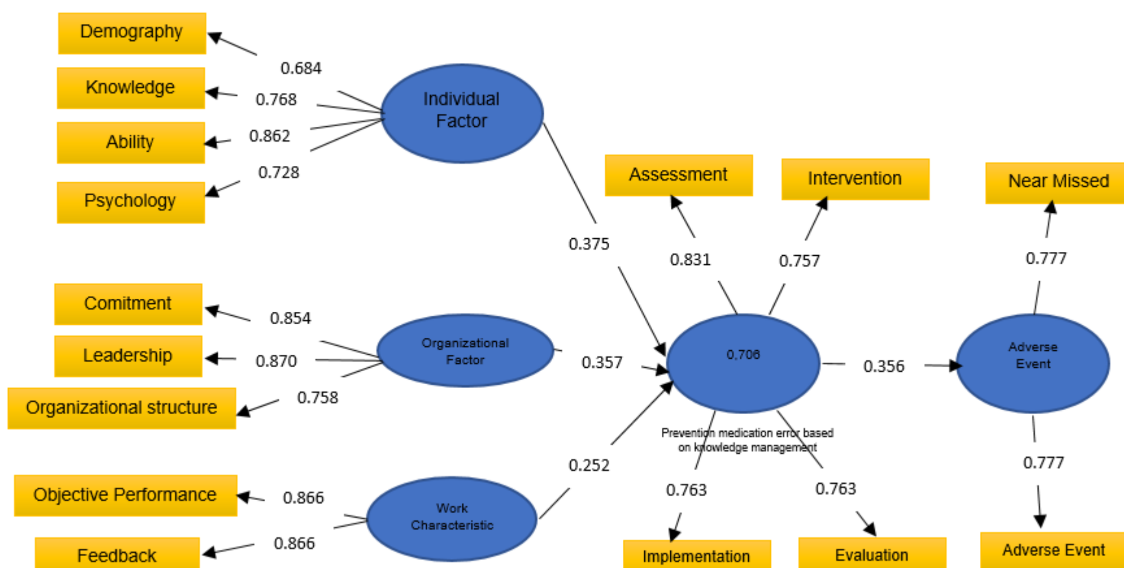
For individual factors, mostly the knowledge of respondents in preventing medication error is in the moderate category (77%). All respondents (100%) have the ability and skill in the moderate category, and most respondents have psychological factor in the moderate category (97%) for organizational factors, organizational commitment in preventing medication error mostly in sufficient category (97%) and organizational structure and culture mostly in enough category (87%). For respondent's work characteristics, the objective performance of all respondents in sufficient category are (100%), and feedback from the leadership in the sufficient category are 24 people (77%).

As seen in Table 2, in the assessment phase, 23 people (74%) has moderate knowledge identification, 26 people (84%) has moderate knowledge application, 17 people (55%) has moderate knowledge sharing, and transfer and 27 people (87%) has moderate knowledge repository. In the planning stage, the majority of respondents has moderate knowledge identification (25 people), moderate knowledge application (29 people), moderate knowledge sharing and transfer (21 people) and moderate knowledge repository (22 people). In the implementation phase the majority of respondents to the knowledge identification quite as many as 30 people (97%), knowledge application as many as 31 people (100%), knowledge sharing and transfer as many as 26 people (84%) and knowledge repository as many as 21 people (68%). In the evaluation phase the majority of respondents to the knowledge identification as many as 21 people (68%), knowledge application as many as 25 people (81%), knowledge sharing and transfer as many as 20 people (65%) and knowledge repository as many as 22 people (71%). Observation result of 31 nurses from three rooms ICU, Mina, and VIP Eden who implement drug administration to patients through a variety of routes showed that adverse event is still happening as much as 1.5%

Model Development of Prevention Medication Error Based on Knowledge Management

The results of the evaluation outer convergent value model validity can be seen in the following figures and tables. Based on picture 1, it can be seen that all the indicators declared invalid where the value of outer loading by the expected criteria is above 0.5. This shows that the whole indicator in the structural are valid.

Results Composite reliability to test the value of reliability indicators in this study can be seen in Table 3.



Picture 1 Outer loading Value on Prevention medication error model based on Knowledge Management

Table 3. Results of Convergent Validity of the Prevention medication error model based on Knowledge Management

No	Variable	Concronbach Alpha	Composite Reliability	Note
1	Individual factor	0.733	0.834	Valid
2	Organizational factor	0.769	0.867	Valid
3	*Work characteristic*	0.668	0.858	Valid
4	Prevention medication error based on knowledge management	0.777	0.857	Valid

Table 4. Statistical result of several variables that potentially prevent medication errors

No	Variable	Result	Note
1	Individual factor	Path coefficient = 0.560 Standard deviation = 0,120 T statistic = 4,671	Significant
2	Organizational factor	Path coefficient = 0,276 Standard deviation = 0,110 T statistic = 2,504	Significant
3	Work characteristic factor	Path coefficient = 0,309 Standard deviation = 0,155 T statistic = 1,988	Significant
4	Prevention medication error based on knowledge management	Path Coefficient = -0,486 Standard deviation = 0,063 T Statistic = 7,704	Significant

The value of each variable composite reliability study showed a value of > 0.7. Cronbach alpha value of each variable also showed a value of > 0.6. It can be concluded that each variable has met reliability test.

These results indicate that there is a significant relationship between the variables individual, organization, and work towards the prevention of medication errors characteristic-based on knowledge management. There is a significant relationship between medication error prevention - based on knowledge management against the adverse event. The negative sign of the coefficient indicates the inversely proportional relationship means that the higher prevention medication error factor-based on knowledge management will decrease the incidence rate of an adverse event.

Recommendation of Focus Group Discussion (FGD) for module development in the prevention of medication error based on knowledge management against adverse event

1. Socialize about the adverse event and near missed to the nurses and allowed nurses to report to the Nurse Unit Manager and documented in patient safety report.
2. Patient safety report should regularly be reported to the patient safety team every week so that the risks can be found and prevention can be done immediately.
3. Socialize related to principles of correct drug administration and completeness of drug delivery instrument documentation sheet
4. Change the time of drug administration if the set time is still not applicable; give the autonomy to the each room related the drug administration so that the effectiveness of the drug is also noteworthy. Time of drug administration implemented 10.00-18.00-02:00 hours
5. Documenting drug administration should be relevant to what is done by each nurse.
6. There is a reward for the room which carries out regular reporting of patient safety incidents and for the room with the most minimally incident related patient safety.
7. Sustainability and innovation in the prevention of medication errors should be

considered to be applied continuously and improve patient safety.

Phase 2

The trial of the model conducted from May 8, 2016. The pre-test conducted in 10-day by observation of nurses behavior in preventing medication errors and unexpected events. Firstly, the module is given to nurses in Arofah Safa and Marwah and researcher explain about the module. Researcher accompanied the nurse in administering the drug for two weeks in the morning shift. After two weeks nurses perform independently until ten days and researcher observe it as a post-test.

The results of pre-test and post-test of implementation of the application of medication error prevention module-based on knowledge management can be seen in Table 5.

Table 5. Results of Implementation of Medication Error Prevention-Based on Knowledge Management against adverse event

Prevention medication error based on knowledge management	Pre			Post		
	Good	enough	less	Good	Enough	less
Assessment						
Knowledge identification			29 (100%)	4 (14%)	25 (86%)	0
Knowledge application	5 (17%)	22 (76%)	2 (7%)	14 (48%)	15 (52%)	0
Knowledge Sharing and Transfer	2 (7%)	24 (83%)	3 (10%)	9 (31%)	20 (69%)	0
Knowledge repository	5 (17%)	22 (76%)	2 (7%)	13 (45%)	16 (55%)	0
Intervention						
Knowledge identification	0	20 (69%)	9 (31%)	5 (17%)	24 (83%)	0
Knowledge application	7 (24%)	22 (76%)	0	14 (48%)	15 (52%)	0
Knowledge Sharing and Transfer	6 (21%)	21 (72%)	2 (7%)	7 (24%)	22 (76%)	0
Knowledge repository	5 (17%)	18 (62%)	6 (21%)	7 (24%)	22 (76%)	0
Implementation						
Knowledge identification	17 (59%)	12 (41%)	0	18 (62%)	11 (38%)	0
Knowledge application	6 (21%)	23 (79%)	2 (7%)	28 (97%)	1 (3%)	0
Knowledge Sharing and Transfer	5 (17%)	22 (76%)	2 (7%)	6 (21%)	23 (79%)	0
Knowledge repository	12 (41%)	17 (59%)	0	14 (48%)	15 (52%)	0
Evaluation						
Knowledge identification	0	0	29 (100%)	5 (17%)	24 (83%)	0
Knowledge application	0	0	29 (100%)	8 (28%)	21 (72%)	0
Knowledge Sharing and Transfer	0	1 (3%)	28 (97%)	10 (34%)	19 (66%)	0
Knowledge repository	0	0	29 (100%)	10 (34%)	19 (66%)	0

Table 6. Statistical analysis of pre and post intervention between adverse event and near missed

	Δ – SD	Z	Asymp. Sig (2-tailed)
Advers event	0.15 ± 0	2.023	0.043
Near missed	89.08 ± 3.78	4.703	0.000

Results of statistical analysis of the near missed by using Wilcoxon Signed Rank test showed a significance value (p) = 0.000, less than the standard value of α = 0.05 which indicates that there is an influence of medication error prevention knowledge

management based on the nearly missed incident. While the results of the statistical analysis of the adverse event by using Wilcoxon Signed Rank Test showed significance value (p) = 0.043, less than the standard value of α = 0.05 which indicates that there is the influence of medication error prevention-based on knowledge management against the adverse event.

DISCUSSION

Individual Factors Against the Prevention of Medication Error Based on Knowledge Management

The results of PLS analysis obtained that the coefficient value of 0.56 lines and 4,671 t statistic (t> 1.96). It can be concluded that individual factors contribute to the adoption of knowledge management-based medication error and indirectly an attempt to reduce the adverse event. Components of the individual factors include knowledge, abilities, skills of nurses, and psychological. Mc. Closhey & Mc. Cain (1988) research results which cited in Gillies (2004) stated that nurses who have higher education also have the ability to work better. Efforts to increase knowledge is an important thing especially in the context of patient safety. Human resource-limited knowledge was health services problem to unable manage service-oriented based on patient safety which is a required key for the sake of security created by the care given by health workers, including nurses.

In this case, the ability and skills of nurses related to the implementation of the drugs correct administration principles conducted by nurses include right patient, right drug, right indication, right dose, right route of administration, the correct time and the correct documentation.

Psychological factors include perception, motivation, attitude and willingness to learn. Perception in this case related to the satisfaction of nurses to the salary given by the health services. The motivation of nurse to maintain patient safety efforts and motivation of the leadership that made more development in work. The attitude and willingness to learn make nurses more responsible for their actions. Their high willingness to study of RSUI nurses thus requiring hospital organization active role as a media to conduct information and knowledge for nurses.

Organization Factors Against the Prevention of Medication Error Based on Knowledge Management

The study results, the analysis of PLS obtained coefficient t statistic lines 0276 and 2504 (t> 1.96), these results suggest that there is significant influence between the variables of organizational factors on medication error prevention-based knowledge management. Organization factors have sub-variables included organizational commitment, leadership, structure, and culture of the organization.

The organization structure shows how a group designed, lines of communication and relationships of authority and decision-making (Marquis & Huston, 2000). Organization commitment stated here include hospitals vision and mission suitability, reward and punishment, training and development. RSUI's Vision and the mission were appropriate, particularly related to Quality Improvement and Patient Safety. Reward and punishment imposed by the hospitals, especially in a room with a patient safety incident reporting implemented by regularly documented every week and every month. Currently, nurses in the hospitals are still got no reward and punishment in particular, but every month there is a favorite nurse election based on a poll of the patient. Training and development at RSUI were based on their regular schedule in the improvement of knowledge especially nurses with information in the form of in-house training with the involvement of the expert of experts according to the field or socialization by peers who have been carrying out training of ex-house training.

Instruction model leadership is indicated by the high task and low relationship. RSUI leadership has contributed greatly to the compliance of nurses in implementing guidelines for prevention of medication errors. This is consistent with the theory that nurse manager has a very important role in implementing patient safety, especially the prevention of medication errors. In other research, any correlation between nurse's knowledge levels with right principle implementation of medication on injection action (Gede, Pratama, Prabowo, & Rahil, n.d.)

The organization system in RSUI was well structured so that the chain of command and

coordination lines between each field can be implemented quite well. Given the structure of a good organization can support nurse adherence in doing medication error prevention.

Work characteristic Against the Prevention of Medication Error Based on Knowledge Management

The results of PLS analysis obtained coefficient lines 0309 and t statistic is 1.98 (t> 1.96). This showed that there is significant influence between variable factors, work characteristic against the prevention of medication errors based knowledge management. Further found also showed that the objective performance is a domain factor related to nursing compliance in applying the prevention of medication errors.

Robbin (2008) stated that a work characteristic is an approach to work that is specified in 5 dimensions of the core characteristics: skill variety, task identity, task significance, autonomy, and feedback.

In RSUI Malang district, job design delivered at the beginning of nurse orientation after they accepted as a nurse. Nurses are oriented about their responsibilities, rights, and duties as a nurse at the hospital. This activity is closely related to job performance, and supervision carried out by hospitals, but this activity still does not yet implemented optimally. Therefore, the hospital should perform evaluation and amelioration of performance and supervision.

Implementation of Medication Error Prevention - Based on Knowledge Management against Adverse Event

The trial model of knowledge-based prevention of medication errors management as an effort to decrease the adverse event of 4 modules that have been tested to decrease the adverse event. The significant difference is the inaccuracy of time and documentation, where nurses do not realize the impact that may arise in the administration of drugs that do not correspond with the timing so that the next shift could be faster or slower administer the drugs so it can influence the effectiveness of drug delivery.

Based on the overall hypothesis testing, it can be seen significant lines, models describing these results is the variable of individuals ability, organizations and work characteristic variable against the prevention of medication errors based knowledge management and indirectly to decrease the adverse event.

CONCLUSIONS

Individual factors (demographics data, level of knowledge, abilities, and skills, and psychological) significantly influence on the prevention of medication errors based on knowledge management. While organizational factors (organizational commitment, leadership, structure, and organizational culture) significantly affect the prevention of medication errors based on knowledge management. Job characteristic factors (objective performance and feedback) significantly influence the medication error prevention-based knowledge management.

Model of medication error prevention-based on knowledge management is influenced by individual factors, organization and work characteristic. Medication error prevention-based knowledge management can significantly reduce the unexpected incidence. Learning with knowledge management methods are used so that the nurse can learn about discussion, formulate, and decide on knowledge gained so can be easily applied to the ability of nurses in drug delivery.

To enhance the prevention of medication error, it needs to make a list of the order of nursing personnel who will participate in continuing education, training or seminars as a form of nursing staff's knowledge increase. Application of medication error prevention module-based on knowledge management can be performed on orientation activities at the first time of nurse work. Create pre-conference and post-conference activities routine at every turn shift as a medium to add information and knowledge for nurses. Create continue evaluation and supervision for nurses to conduct the safe administration of drugs and as an effort to improve the behavior of the nurses. Enable the nursing committee specifically to credentialing about the nurse actions. Initiate PMKP program proactively that spurred the realization of a work culture toward patient safety oriented. Hold a gradual guidance and training for nurses who still have less working period regarding its implementation about the hospital's patient safety.

REFERENCES

FM Hurtsey, W.N, 2007, Inappropriate Prescribing in Older ED Population. AM J Emerg Med, 22-32

Gasik, S, 2011, A Model of Project *Knowledge management*, *Project Management Journal, 42*(3), 23-44.

Gede, I. D., Pratama, M., Prabowo, T., & Rahil, N. H. (n.d.). The relation between nurse ' s knowledge levels with right principle implementation of medication on injection action at rsud wates.

Gillies, 2004, *Manajemen Keperawatan: Suatu Pendekatan Sistem,* Edisi Kedua, Philadelphia, WB Saunders

Kim, M. S. (2012). Medication Error Management Climate and Perception for System Use according to Construction of Medication Error Prevention System. *Journal of Korean Academy of Nursing*, *42*(4), 568. https://doi.org/10.4040/jkan.2012.42.4.568

Marquis & Huston, 2010, *Kepemimpinan dan Manajemen Keperawatan.* Jakarta: EGC

Paparella, S. (2011). Is a back to basics approach to medication error reduction enough? *Journal of Emergency Nursing*. https://doi.org/10.1016/j.jen.2011.05.003

Perwitasari, D. A., Abror, J., & Wahyuningsih, I. (2010). Medication Errors In Outpatients Of A Government Hospital In Yogyakarta Indonesia, *1*(1), 8–10.

Robbins, 2008, *Perilaku Organisasi Edisi Ke-12*, Jakarta, Salemba Empat

Roterman, I, 2014, *Simulation in Medicine,* Walter de Gruyter GmbH & Co KG. *Kualitatif, Kuantotatif dan R&D.* Bandung, Alfabeta.

Swinkey, N. J., & Manthey, C. W. (2001). Medication error/adverse drug event (MEADE) classification. *ASHP Midyear Clinical Meeting*, *36*, P–737D.

W. Maalej, A. T, 2013, *Managing Requirements Knowledge.* Springer-Verlag Berlin Heidelber.

Wei, S., Shrestha, R., Williamson, J., & Morgan, C. (2011). Medication error prevention programme. *Internal Medicine Journal.Conference: Royal Australasian College of Physicians Congress 2011 Darwin, NT Australia.Conference Start: 20110522 Conference End: 20110525.Conference Publication: (var.pagings).41 ()(Pp 45), 2011.Date of Publication: May 20.* Retrieved from DO - http://dx.doi.org/10.1111/j.1445-5994.2011.02494.x

Zafar, A. (2007). MEADERS: Medication Errors and Adverse Drug Event Reporting system. *AMIA ... Annual Symposium Proceedings / AMIA Symposium. AMIA Symposium*, 1167. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/18694263

JIGSAW PUZZLE IMPROVE FINE MOTOR ABILITIES OF UPPER EXTREMITIES IN POST-STROKE ISCHEMIC CLIENTS

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ABSTRACT

Introduction: Ischemic stroke is a disease caused by focal cerebral ischemia, where is a decline in blood flow that needed for neuronal metabolism, leading to neurologic deficit include motor deficit such as fine motor skills impairment. Therapy of fine motor skills disorders is to improve motor function, prevent contractures and complications. These study aimed to identify the effect of playing Jigsaw Puzzle on muscle strength, extensive motion, and upper extremity fine motor skills in patients with ischemic stroke at Dr. Moewardi Hospital, Surakarta. **Methods:** Experimental Quasi pre-posttest one group control. The number of samples were 34 respondents selected using purposive sampling technique. The samples were divided into intervention and control groups. The intervention group was 17 respondents who were given standard treatment hospital and played Jigsaw Puzzle 2 times a day for six days. Control group is one respondent given by hospital standard therapy without given additional Jigsaw Puzzle game. Evaluation of these research is done on the first and seventh day for those groups **Result**: The results showed that muscle strength, the range of joint motion and fine motor skills of upper extremities increased (p = 0.001) significantly after being given the Jigsaw Puzzle games. These means playing Jigsaw Puzzle increase muscle strength, the range of joint motion and upper extremity fine motor skill of ischemic stroke patients. **Discuss and conclusion**: Jigsaw puzzle game administration as additional rehabilitation therapy in upper extremity fine motor to minimize the occurrence of contractures and motor disorders in patients with ischemic stroke. Jigsaw puzzle game therapy capable of creating repetitive motion as a key of neurological rehabilitation in Ischemic Stroke. This study recommends using jigsaw puzzle game as one of intervention in the nursing care of Ischemic Stroke patients.

Keywords: Ischemic stroke, upper extremity fine motor, Jigsaw Puzzle

INTRODUCTION

Stroke is a disease that caused by the presence of ischemia (inadequate blood flow) or bleeding in the brain that leads to neurological changes, the death of brain cells, and function loss in movement, sensations, and emotions (Black and Hawks 2005; Lewis et al. 2007). Stroke is leading cause of disability in both developed and developing countries (American Hearth Association, 2010). A residual symptom of Ischemic Stroke is a blockage in the middle of cerebral artery lead to extremity weakness, especially fingers (Ringleb 2011; Kochanek et al. 2011). The long-term weakness of the fingers may result in muscle strength loss, decreased the range of motion and function loss of the movement, leading to interruption of fingers fine motor skills (American Stroke Association (ASA) 2013; Warlow, et al., 2007, Eng & Harris, 2009). About 55% of Ischemic Stroke clients experienced residual symptoms such as hand weakness, especially fingers (Ward, et al. 2015; Kochanek et al. 2011). Treatment of disability in upper extremity is more difficult than lower extremity. Thus, seriously impact on rehabilitation progress in stroke. Then, proper treatment is needed to prevent permanent disability especially during the acute phase of stroke 48 hours post-stroke where the appropriate treatment can affect 33% of patients recovery within three months (Foley, et al., 2013; Ikawati 2010).

The decline in muscle cells function and impulse transmission impairment in motor neuron leads to inaccuracy and fingers coordination impairment in integrating the function of muscles, bones, and nerves. Disorders of the fingers coordination are called fine motor disorders (American Stroke Association, 2013). Appropriate stimulation was given by rehabilitation with repetitive motions therapy (Neistadt 1986). Repetitive exercises can be done using a jigsaw puzzle games. Jigsaw puzzle game is a puzzle game that consists of gripping, holding and manipulating objects using concentration and coordination between eyes and hands (Neistadt 1986; Foley DL, Morley KI, Madden PAF, et al. 2010).

Major Depression and the Metabolic Syndrome.Twin Research and Human Genetic; 13(4): 347-58. Howed that using the puzzle as treatment can stimulate the motor nerves in brain injury and giving rise the

potential action as initial process of muscle contraction.

Preliminary studies conducted in January 2016 in Dr. Moewardi Hospital, Surakarta. The data showed that 5 of 6 clients suffered from fine motor skills impairment such as not being able to hold a cup, grasping the ball and adjusting buttons. The assessment using the Modified Motor Assessment Scale (MMAS). Measurements of fingers muscle strength using Hand Dynamometer on six clients of ischemic stroke who were treated for more than six days in Dr. Moewardi Hospital. The score obtained from 5 female clients were below 18.50 to 24.00, while one female client has score below 18.00. The range of motion measurements of 6 clients is done using goniometer. The result showed that five clients suffered from finger extension where score obtained is below 30^0. Physical rehabilitation is an exercise used Range of Motion (ROM) that focuses on muscle strength. Exercise to stimulate fingers strength have not done. Thus six clients suffered in fine motor impairment.

A fine motor impairment that often occurs in Ischemic Stroke needs proper nursing interventions to minimize the client's dependency in performing daily activities such as eating, drinking and dressing while undergoing treatment at the hospital. These study wants to prove the effect of jigsaw puzzles game to improve fine motor of upper extremity on post-ischemic stroke clients in Dr. Moewardi Hospital, Surakarta.

METHODS

The design of this research is quasi-experiment using the pre-post test in the control group. This design is used to compare the results of the intervention of two groups: intervention and comparison groups.

The population is all 58 clients ischemic stroke who were treated in Stroke Care Unit in Dr. Moewardi Hospital, Surakarta. The sample used is 17 of the treatment group and 17 of the control group. The research was conduct for a month. The independent variable is playing Jigsaw Puzzle. The dependent variable is muscle strength, extensive motion, upper extremity fine motor skills.

Research instruments are using Hand Grip Dynamometer to measure muscle strength, Goniometer for a range of joint motion and Modified Motor Assessment Scale (MMAS) for measuring upper extremity fine motor.

RESULT

Table 1. Results of respondent equality analysis based on the frequency of attacks showed that between intervention and control groups had an equal frequency of attacks. Seen from the results of the statistical test with p-value 0.366 (alpha = 0.05) that there is no significant differences of group respondents (equivalent) based on the frequency of attacks.

Respondent equality analysis results based on age in Table 1 shows that between treatment and control group had an equal age. Seen from the results of the statistical test with p-value 0.155 (alpha = 0.05) that there is no significant differences (equivalent) in group respondents by age.

Respondent equality analysis results based on the affected extremity in Table 1 showed that between intervention and control groups had equal affected extremity. Seen from the results of the statistical test with p-value 0.366 (alpha = 0.05) that there is no significant differences (equivalent) in group respondents based on the affected stroke extremity.

Table 2 showed that mean difference in fingers muscle strength after jigsaw puzzle games for six days in men of intervention group is 7.217 with standard deviation 1.790, and mean difference of comparison group is 1,550 with standard deviation 1.693. Statistical test by using independent t-test obtained p-value 0.001 and alpha 0.05, means that there is a significant effect of jigsaw puzzle games against the mean difference in fingers muscle strength of intervention and comparison groups in the male.

The mean difference in female fingers muscle strength after jigsaw puzzle game of intervention group 3.600 and standard deviation 0.761 while meaning the difference in comparison group 1,218 with standard deviation 0.560. Statistical test by using independent t-test obtained p-value 0.001 with alpha 0.05, means that there is a significant effect of jigsaw puzzle games against the mean difference in fingers muscle strength in intervention and comparison groups in the female.

Table 1 Clients observation results based on age, gender, frequency of attacks, the affected extremity in Ischemic Stroke clients

Client Characteristics	Intervention Group		Comparison Group		Total		P
	f(x)	%	f(x)	%	N	%	
Gender							
Male	6	35.3	6	35.3	12	35,3	0,640
Female	11	64.7	11	64.7	22	64,7	
Total	17	100.0	17	100.0	34	100	
The frequency of attacks							
The first attack	10	58,8	8	47,1	18	52,9	0,366
The second attack	7	41,2	9	52,9	16	47,1	
Total	17	100,0	17	100,0	34	100	
Age							
36-45	0	0	6	35,3	6	17,6	0,155
46-55	10	58,8	5	29,4	15	44,1	
56-65	7	41,2	6	35,3	13	38,3	
Total	17	100,0	17	100,0	34	100,0	
The affected upper extremities							
Right	8	47,1	10	58,8	18	52,9	0,366
Left	9	52,9	7	41,2	16	47,1	
Total	17	100,0	17	100,0	34	100,0	

Table 2 Difference score of fingers muscle strength between intervention with comparison group after jigsaw puzzle intervention for six days

Variables	Group	n	Mean Difference ±	Standard deviation	p
Muscle strength	Male				
	Intervention	6	7,217	1,790	0,001
	Comparison	6	1,550	1,693	
	Female				
	Intervention	11	3,600	0,761	0,001
	Comparison	11	1,218	0,560	

Table 3 showed that mean difference in the range of motion of the fingers after jigsaw puzzle game for six days in intervention group 6.65 with standard deviation 2.029, while the comparison group 2.82 with standard deviation 2.942. Statistical test using independent t-test obtained p-value 0.001 with alpha 0.05, means that there is a significant effect of jigsaw puzzle games against the mean difference in the range of motion of the fingers between intervention and comparison groups.

Table 4 showed that mean difference of upper extremity fine motor after jigsaw puzzle game for six days in intervention group 3.29 with standard deviation 0.588, while the comparison group 0.94 with standard deviation 0.772. Statistical test using independent t-test obtained p-value 0.001 with alpha 0.05, means that there is a significant effect of jigsaw puzzle games against mean difference upper extremity fine motor between intervention and comparison groups.

Table 3 Results of the mean difference in range of motion of the fingers in intervention and comparison group after jigsaw puzzles intervention for six days

Variables	Group	N	Mean ±	Standard deviation	*p*-value
Range of motion of the fingers	Intervention	17	6,65	2,029	0,001
	Comparison	17	2,82	2,942	

Table 4 Results of the mean difference of upper extremity fine motor between intervention and comparison group after jigsaw puzzle intervention for six days

Variables	**Group**	**N**	**Mean±**	**Standard deviation**	***p*-value**
Upper extremity fine motor	Intervention	17	3,29	0,588	0,001
	Comparison	17	0,94	0,772	

DISCUSSION

Based on the results of the study before jigsaw puzzle games intervention indicated that the score of muscle strength between male and female had a different range of score. At 11 females clients in intervention group had score of muscle strength below 18.00 which means that all females in these study experienced a decrease in muscle strength and less category, means that there is a lack of muscle movement or weak areas in accordance with the dictates like the palm face down, or straight twisted but if detained a bit was not able to move. At six males clients in the intervention group had a score of muscle strength below 27.00 means in less category.

The same condition is also seen in comparison group before intervention by hospital standard. A score of muscle strength of the fingers on the 11 females and six males also included in less category.

The decreasing of muscle strength of the fingers is caused by the failure of sensory nerves to deliver impulses to motor nerves lead to the failure of potential action in the muscle. Decreased muscle strength in Ischemic stroke occurs largely due to component central nervous system failure in impulse conduction mechanism resulting mild to severe weakness effect on the contralateral side and caused limitations in movement (LeMone & Burke 2004). Research conducted by Misbach & Soertidewi (2011) said that from data survey of 28 hospitals in Indonesia about 95% clients of after ischemic stroke decreased in muscle strength.

Muscle strength is muscle ability to withstand the load both external and internal. The muscle strength of the fingers is associated with neuromuscular system relates to how large the ability of the nervous system to activate the muscles to perform contractions. The fewer muscle fibers are activated, produced smaller muscle strength (Irfan, 2010).

One key success of physical therapy in ischemic stroke with decreased muscle strength is a repetitive movement that will result in more activated muscle fibers. Repetitive movements will be able to activate the motor unit, thus causing repetitive muscle contractions (Neistadt 1986). Repetitive movements that specific to the hand movement is effective as the initial response to muscles and brain activity (Neistadt 1986). Proper selection of media that contains coordination between the nervous system, musculoskeletal system, motor and sensory systems are capable of accelerating the development of fine motor skills. Puzzle is one of the media used to rehabilitation nursing interventions in Ischemic stroke

A jigsaw puzzle is a game that requires coordination of the fingers and eyes to compose divided picture into an integral part (Alajlan 2009) At 17 client of interventions group play jigsaw puzzle game two times a day for six days showed the increasing of muscle strength score. At 11 female clients, muscle strength scores increased above of 18.00. After jigsaw puzzle game 11 clients demonstrated fair category of muscle strength, means that muscles able to contract but can not move the body against gravity, but when gravity is removed by changing the body position, muscles can move the full body.

Increased muscle strength also occurred in the male intervention group. After six clients play jigsaw puzzle games showed an increase in muscle strength score above of 27.00. After jigsaw puzzles intervention 5 respondents were in fair category, means that the muscles able to

contract but can not move the body against gravity, but when gravity is removed by changes in body position, muscles can move the full body, and 1 client in fair category means that the muscles of the fingers able to contract and move the full body against gravity.

Effect of jigsaw puzzle games on muscle strength of the fingers is evidenced by statistical test using paired T-test, showed that female intervention group p-value ≤ 0,05 = 0.001, means that there is the effect of jigsaw puzzle game on the muscle strength of the fingers in a female with ischemic stroke who experience decreased muscle strength. An intervention group of male p-value ≤ 0.05 = 0.001, means that there is the effect of jigsaw puzzle games on muscle strength of the fingers in Ischemic Stroke who experience decreased muscle strength.

Different conditions showed in the comparison group. About 3 of 11 females clients had scored above 18.00 or in fair category after standardized hospital intervention. About 3 of 6 males client remains in the poor category. This condition occurs because the hospital standard therapy given to a range of motion therapy of the fingers conducted once a day without any additional therapy.

Effect of hospital standard therapy to the muscle strength of the fingers is evidenced by statistical test using paired T-test, showed that female intervention group p-value ≤ 0,05 = 0.001, means that there is the effect of standardized hospital therapy on the muscle strength of the fingers in women with Ischemic Stroke who experienced decreased muscle strength. In male intervention group p-value ≥ 0.05 = 0.075, means that there is no effect of standardized hospital therapy on muscle strength of the fingers in men with Ischemic Stroke who experienced muscle strength decreased.

The muscle strength of the fingers in the intervention group of jigsaw puzzles game show greater improvement than hospital standardized therapy. These happened because jigsaw puzzle games stimulated muscles contraction causing Ca^{2+} lines open in sarcoplasmic reticulum then stimulate potential actions (Shen Li, 2014). Potential actions that continuously occur may activate many motor units in muscle fibers. Those will continue to contract muscles and then muscle strength increases.

Repetitive active movements in jigsaw puzzle game are expected to increase muscle strength. The more active movements when the rehabilitation, the results obtained will be more optimal. Supported research conducted by (Prok 2016) said that there is significant correlation between fingers active movement exercises effect to increase the muscle strength of the fingers on Stroke client. The same results conducted by Fatkhurrohman (2011) also pointed out that upper extremities exercise on hemiparesis by moving fingers three times a day for seven days would increase the muscle strength of the fingers. Those were proved by statistical test results p = 0.001.

Differences in muscle strength values in intervention and comparison groups can be seen from the difference value of muscle strength that had been increased in each client. From the statistical test by independent T-Test showed that female group p-value ≤ 0.05 = 0.001, means that jigsaw puzzle games had more effect on muscle strength increase than standardized hospital therapy. The same thing is also shown in the male group p-value ≤ 0.05 = 0.001.

On recurrent attacks client will face longer rehabilitation process. This rehabilitation process is due to sudden occlusion of blood vessels that previously normal in the first attack allegedly as a result of the progression of stenosis/occlusion of blood vessels that increase the risk of vascular disruption event (Shin et al. 2017). It means that more attacks frequency on Ischemic Stroke leading to longer rehabilitation process than the first attack. (Wirawan 2009) said that long rehabilitation process is influenced by the severity and extent of the lesion of the brain affected by stroke attack.

Based on the results of the study before jigsaw puzzle games intervention indicated that 11 female clients in the intervention group had a range of motion value measured at the metacarpalphalange (MCP). At the time of the finger extension under 10^0 were included in a poor category means that the joint can move, but there were obstacles. At six male clients comprehensive MCP joint motion value is under 10^0 were included in a poor category means that the joint can move, but there were obstacles. The same condition is also seen in the comparison group before hospital standard intervention. The range of joint motion MCP value of finger extension on 11 female clients and six male clients were also included in the

poor category, means that the joint can move, but there were obstacles such as pain in the finger joints when performed extension. This barrier occurs due to joints had not being moved in a long time.

The range of joint motion is the maximum capacity that can be achieved by the joint (Yuliastati. 2011). Decreased muscle strength also contributed to the decline of the joint range of motion. This happened because the bones and joints of the motor system coordinate with each other to produce movement. The force produced by the muscle strength produce synovial fluid to lubricate the joints and formed a layer between the surface-related films that separates the cartilage to not rub against each other, so the range of motion will increase (Kushartanti, 2007).

Jigsaw puzzle game is improving the muscle strength of the fingers, also increased the range of motion. Improvement in range of joint motion occurred on eight clients those in fair category, means that joints capable of full moving and against gravity without resistance. The range of joint motion is one of the fine motor component other than muscle power. Effect of jigsaw puzzle games against the range of joint motion of the fingers is evidenced by the statistical test using Wilcoxon Signed Rank Test which showed that female intervention group p-value ≤ 0,05 = 0.001, means that there is effect of jigsaw puzzle game on range of joint motion of the fingers in women with Ischemic Stroke who experienced decreased muscle strength. In the male intervention group p-value ≤ 0.05 = 0.001, means that there is the effect of jigsaw puzzle games on a range of joint motion of the fingers in men with Ischemic Stroke who experienced decreased muscle strength.

In contrast to the comparison group was given hospital standard intervention. The effect of hospitals standardized therapy to range of joint motion of the fingers is evidenced by statistical test using Wilcoxon Signed Rank Test, showed that female intervention group p-value ≤ 0,05 = 0.001, means that there is effect of standardized hospital therapy to range of joint motion of the fingers in women with Ischemic Stroke clients that experience decreased range of joint motion. In male intervention group p-value ≥ 0.05 = 0.075, means that there is no effect of the hospital standardized therapy to a range of joint motion of the fingers in a male client with Ischemic Stroke that decreased the range of joint motion.

MCP Range of joint motion differences between intervention and comparison groups can be seen from the difference in value between each client. Statistical test using Mann-Whitney test showed that p-value ≤ 0,05 = 0.001, means that jigsaw puzzle games more influential on the increase of MCP range of joint motion when extention than hospital standardized therapy.

The repetitive motion produced by jigsaw puzzle games able to increase the range of motion of the fingers then increase the MCP joint motion. Repetitive motions of MCP joint will cause the cartilage surface between two bones friction against each other. Emphasis on cartilage due to the movement will push the water out of the matrix of cartilage into the synovial fluid, the activity at the joints will maintain synovial fluid which is a joint lubricant so that the joint can move to the maximum (Winters 2004). Supported research conducted by Victoria et.al (2014) revealed that active exercise on the fingers could increase the range of joint motion of the fingers, by activating more muscle fibers on the fingers.

Based on the research revealed that the intervention group of 11 female clients upper extremity fine motor’s score is below of 2. In the intervention group of 6 male clients also demonstrated value of upper extremity fine motor skills below of 2, means that the average client conditions have not been able to open the top of the pen and put it again (client took the top of the pen is placed far edge of the table and brought closer back near the body). These study showed that the weaker muscle strength and the smaller range of joint motion would result in decreased fine motor skills of the upper extremities.

Yudanto (2012) said that the development of fine motor skills parallel with the development of the nervous system and muscles, so fine motor skills is determined by the maturity in integral function of body systems, especially the nervous system and body movement (bones, muscles, and joints). Decreased muscle strength and range of joint motion that occurs continuously also cause fine motor skills disturbances (Eng & Harris, 2009). This is because fine motor skills are organizing between muscles and joints with the nervous system (Yudanto, 2012). So, if there is no movement or stimulation that stimulates muscle contraction will cause fine motor skills disturbances. Therefore, to increase the fine

motor skills is necessary to provide stimulation which includes nerve coordination, muscle movement, and joint movement. So, that will provide balance in the development of fine motor coordination. One of the motion stimulation which includes three aspects is through Jigsaw Puzzle Game.

Jigsaw puzzle game is a puzzle game that requires precise coordination of sensory and motor systems to install parts of a puzzle as expected picture. Neistadt (1986) stated that the puzzle game performed on the client with a head injury could improve fine motor skills of the fingers so that the client can perform daily activities.

Puzzle exercises used to develop eye contact, attention and concentration as well as the eye coordination, hand, and train concepts. Giving jigsaw puzzle two times a day for six days led to an increase in upper extremity fine motor skills. Of the 17 clients, both men and women had fine motor value above of 2, means the client can draw horizontal and vertical lines are alternately 10 times within 20 seconds (at least five lines must be touched and stopped in a vertical line. The line is made should be about 10 cm).

Mean difference between fine motor skills value in intervention group before and after the jigsaw puzzle game is evidenced by the statistical test using Wilcoxon signed rank test showed $p \leq 0,05 = 0.001$, means the provision of additional therapy such as jigsaw puzzle effect on the improvement of fine motor skills of the upper extremity.

Jigsaw puzzle game is a game that requires fingers and eye coordination to develop an image that split into several parts. Jigsaw means eliminating a pattern in the image sequence so that game would be repeated to find that section. Thus the players being motivated and encouraged to continue to arrange and find the missing pattern repeatedly. This repetition is expected to train the client fine motor skills (Alajlan, 2009).

Research conducted by Maureen (2004) argued that the game using the puzzle as the media for six days were carried out at 45 clients can stimulate motor nerves with a head injury and risen the potential action as initial process of muscle contraction. In these studies indicated p-value = 0.01 ($\alpha = 0.05$), means that there is a significant effect on using puzzle media to improve fine motor skills in upper extremity in head injury clients.

Jigsaw puzzle games could motivate clients to discipline in the exercise. Images are presented in this game attract clients to play arranging piece into a series of corresponding images continuously. Wirawan (2009) revealed that client self-motivation is one factor that influences the outcome of the rehabilitation process. This statement is supported by research conducted by Ariyadi (2010) said that high motivation of client in Ischemic Stroke rehabilitation process would produce good and fast outcome, interesting media used to increase client self-motivation (Hariandja, 2013)

A similar study conducted by Smith (2000) of 44 pre-school children using Puzzle and 81% pre-school children increased fine motor skills. Wijanarko (2008) said that by giving a puzzle game for children aged 4-5 years can improve fine motor skills.

In contrast to the comparison group given hospital standardized intervention showed that before the intervention, upper extremity fine motor value is below 2 in both male and female clients. After standardized hospital therapy, the value increasing of fine motor skills occurred in 15 clients, both male, and female, while two clients were not increased fine motor skills. After standardized hospital therapy, only four clients that had fine motor skills value above 2.

Differences in fine motor skills value in comparison group before and after hospital standardized therapy evidenced by statistical test using Wilcoxon signed rank test showed $p \leq 0,05 = 0.01$, means that the provision of standardized hospital therapy affects the increasing of upper extremity fine motor skills.

Differences value between the increasing of fine motor skills of upper extremity also can be seen between intervention and comparison groups. Value difference of fine motor upper extremity in intervention group reaches 23.29 higher than comparison group increased only by 0.94. This difference proved that jigsaw puzzle games could improve upper extremity fine motor skills in intervention group larger than the comparison group.

Difference score in upper extremity motor between given and not given in additional jigsaw puzzle therapy was because of difference in duration and intensity of therapy. Lack of motivation during exercise also contribute to the success of therapy (Wirawan 2009). Hariandja (2013) said that the key success of neurological rehabilitation is duration and intensity of exercise.

A jigsaw puzzle is a game that requires coordination of fingers and eyes to develop an image that split into several parts. Jigsaw means eliminating a pattern in image sequence that game would be repeated to find that image section. Thus the players being motivated and encouraged to continue arranging and finding the missing pattern repeatedly. The repetition is expected to train the client fine motor skills (Alajlan 2009). Active movements that repeatedly occur in this game is expected to increase muscle strength. As a more active movement that occurs during rehabilitation exercises, the results obtained will be more optimal.

If cell membrane produced by the cell membrane is strong enough, the potential action will flow rapidly into all cell membranes. Muscles as locomotor active have irritability indicated by responding process to stimuli (recognize and respond to stimuli/stimulus) the muscles directly without relying on usual neural tissue that activates muscles. Therefore, if skeletal muscle cells or muscle fibers are given a stimulus above or normal threshold, then the muscle cell will fully contract. Otherwise, if the stimulus of the muscle is under threshold/ sub-minimal, the muscle cells will not contract at all. Subminimal threshold stimulus may cause contraction response with the condition given in fast and several times (Feriyawati 2005).

Jigsaw puzzle games using interesting images, inexpensive and safe, so clients are interested and eager to perform the therapy. An interesting and inexpensive therapy used to improve motivation during the acute phase of post-stroke rehabilitation is needed for disciplined in client therapeutic process.

Supporting research conducted by Prok (2016) said that there is a significant correlation between active motion exercises effect on hand grasping the ball toward increasing muscle strength of the fingers on Stroke client. In intervention group given grasping the ball three times a day for seven days. The comparison group gave according to hospital standard therapy one times a day. Both groups showed an increase in muscle strength of the fingers but with grasping the ball as additional therapy, the difference in muscle strength seen more significant with p-value 0.001.

Other supporting studies is research conducted by Maureen (2004), suggested that puzzles therapy more effective than using conventional therapies. There are significant differences in fine motor skills and muscle strength in clients who were treated using puzzle and conventional. In these study, explained that clients more interested using puzzle for therapy even though the duration is longer. Clients feel challenged to finish the puzzles.

CONCLUSIONS

Intervention using Jigsaw Puzzle Games can improve upper extremity fine motor skills on the client after Ischemic Stroke. The increase in fine motor skills of upper extremities followed by increasing of muscle strength of the fingers and increase the range of motion in metacarpalphalange (MCP).

Continuing Jigsaw Puzzle game as one independent action for medical-surgical nurses especially neurology nurse so that clients can minimize muscle stiffness after Ischemic Stroke. Further research conducted by group clients based on gender. Can be used as one of the additional hospital therapy in the rehabilitation process after Ischemic Stroke with low cost, materials that are safe for the client and easily obtained. Giving a strong motivation and family support is an important factor in patients rehabilitation process after ischemic stroke with upper extremity fine motor impairment.

REFERENCES

Alajlan, N., 2009. Solving Square Jigsaw Puzzles Using Dynamic Programming and the Hungarian Procedure Naif Alajlan Advanced Lab for Intelligent Systems Research, Department of Computer Engineering,. , 6(11), pp.1941–1947.

Black,J.M., dan Hawks,J.H.2005. Medical Surgical Nursing. New York. Elsevier

Fatkhurrohman M. 2011. Teknologi Stimulasi Elektrik (Elektrical Stimulation) Bagi Pasien Yang Mengalami Kelemahan Otot Dan Nyeri. Keperawatan Medikal Bedah FIK-UI

Feriyawati, L., 2005. Anatomi Sistem Saraf Dan Perannya Dalam Regulasi Kontraksi Otot Rangka.

Foley DL, Morley KI, Madden PAF, et al. 2013. Major Depression and the

Metabolic Syndrome.Twin Research and Human Genetic; 13(4): 347-58.

Hariandja, 2013 Identifikasi Kebutuhan Akan Sistem Rehabilitasi Berbasis Teknologi Terjangkau Untuk Penderita Stroke di Indonesia, Lembaga Penelitian dan Pengabdian kepada Masyarakat Universitas Katolik Parahyangan.

Haris J E, Eng J J., 2009. Paretic Upper-Limb Strength Best Explains Arm Activity In People With Stroke http://ptjournal.apta.org/content/87/1/88.full.pdf+html. Diakses pada tanggal 16 April 2016.

Irfan, Muhammad. 2010. Fisioterapi bagi insan stroke. Yogyakarta : Graha ilmu

Ikawati, Z., 2010. *Farmakologi Molekuler*, Yogyakarta: UGM Press.

Kochanek, K.D. et al., 2011. National Vital Statistics Reports Deaths : Final Data for 2009. , 60(3).

Kushartanti (2007) Pengaruh Latihan Range Of Motion (ROM) Terhadap Fleksibilitas Sendi Lutut Pada Lansia Di Panti Wreda Wening Wardoyo Ungaran, Nurse Media Journal of Nursing Vol 1, No.2.

Li, Shen et al. “Infarction of the Corpus Callosum: A Retrospective Clinical Investigation.” Ed. Jeroen Hendrikse. PLoS ONE 10.3 (2015): e0120409. PMC. Web. 2 June 2017.

LeMone, P.T. & Burke, K.M., 2004. *Medical-Surgical Nursing: Critical Thinking in Client Care*, Pearson Prentice Hall: New Jersey.

Lewis, S.L. et al., 2007. *Assessment and Management of Clinical Problems* Volume 2., Pennsylvania: W.B Saunders.

Neistadt, M.E., 1986. The Effects of Different Functional Fine Motor With Brain Injury.

Prok, W., 2016. Pengaruh latihan gerak aktif menggenggam bola pada pasien stroke diukur dengan handgrip dynamometer. , 4(April).

Ringleb, S. I., Dhakal, A., Anderson, C. D., Bawab, S. and Paranjape, R. (2011), Effects of lateral ligament sectioning on the stability of the ankle and subtalar joint. J. Orthop. Res., 29: 1459–1464. doi:10.1002/jor.21407

Smith- Jane Case.2000. Effects of Occupational Therapy Services on Fine Motor And Functional Performance in Preschool Children. American Journal of Occupational Therapy. Vol 54, 372-380

Shin, D.H., Lee, P.H. & Bang, O.Y., 2017. Mechanisms of Recurrence in Subtypes of Ischemic Stroke. , 62.

Warlow, C.P., Dennis, M.S., Gijn, V.J., Hankey, G J., Sandercock, P.A., Bamford, J.M., 2007. Stroke, In : a Practical Guide to Management. 1st ed. London: Blackwell Science

Wijanarko, H., 2008. *Efektifitas Alat Permainan Edukatif Puzzle Terhadap Perkembangan Motorik Halus Anak Usia 4-5 Tahun Berdasarkan DDST*, Semarang: Thesis. Universitas Diponegoro.

Winters, M., 2004. Passive versus active stretching of hip flexor muscles in subjects with limited hip extension: a randomized clinical trial.

Wirawan, R.P., 2009. *Rehabilitasi Stroke pada Pelayanan Kesehatan Primer*, Jakarta: SMF Rehabilitasi Medis RS Fatmawati.

Victoria, Arlies Z, et al. 2014. Pengaruh Latihan Lateral Prehension Grip Terhadap Peningkatan Luas Gerak Sendi (LGS) Jari Tangan Pada Pasien Stroke di Rsud Dr. H Soewondo Kendal. Stikes Telogorejo Semarang

Yudanto (2010). Stimulasi Gerak Dasar Siswa Sekolah Dasar Kelas Bawah. Jurnal Pendidikan Jasmani Indonesia, Volume 4, Nomor 2, Nopember 2007. FIK UNY

Yuliastati., 2011. *Pengaruh Latihan Rentang Gerak Sendi Terhadap Kekuatan Otot dan Luas Gerak Sendi Anak Dengan Tuna Grahita Sedang di Sekolah Luar Biasa Kota Bogo*, Thesis. Universitas Indonesia. Jakarta.

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Volume 12 Nomor 1 April 2017

- FACTORS AFFECTING THE COMPLIANCE OF MYANMAR NURSES IN PERFORMING STANDARD PRECAUTION
- THE EFFECTIVENESS OF MANGOSTEEN PEELS EXTRACT AGAINST THE TOTAL OF T LYMPHOCYTES IN HIV PATIENTS
- QUALITY IMPROVEMENT MODEL OF NURSING EDUCATION IN MUHAMMADIYAH UNIVERSITIES TOWARD COMPETITIVE ADVANTAGE
- NURSE BEHAVIOR IN IMPLEMENTATION OF DIABETES MELLITUS EDUCATION BASED ON THEORY OF PLANNED BEHAVIOR
- CONSUMPTION OF FRUIT AND VEGETABLE WITH RISK OF OBESITY IN SCHOOL-AGE CHILDREN
- DETERMINANTS FACTORS OF VASECTOMY METHOD SELECTION
- MODELING PARTICIPANT TOWARD SELF-CARE DEFICIT ON SCHIZOPHRENIC CLIENTS
- DEVELOPMENT OF TRANSACTIONAL COMMUNICATION MODEL FOR MIDWIFE AND POSTPARTUM MOTHER ON EXCLUSIVE BREASTFEEDING
- PSIKONEUROIMUNOLOGY APPROACH TO IMPROVE RECOVERY MOTIVATION, DECREASE CORTISOL AND BLOOD GLUCOSE OF DM TYPE 2 PATIENTS WITH DHIKR THERAPY
- HEALTH CARE-SEEKING BEHAVIOUR OF COASTAL COMMUNITIES IN BANYUWANGI, INDONESIA: RESULTS OF A CROSS-SECTIONAL SURVEY
- THE ADAPTATION MODEL OF CARE GIVER IN TREATING FAMILY MEMBERS WITH SCHIZOPHRENIA IN KEDIRI EAST JAVA
- COPING MECHANISM OF CAREER WOMEN WITH BREAST CANCER
- PROLANIS IMPLEMENTATION EFFECTIVE TO CONTROL FASTING BLOOD SUGAR, HbA1c AND TOTAL CHOLESTEROL LEVELS IN PATIENTS WITH TYPE 2 DIABETES
- ENCULTURATION IN THE LIFE PATTERN OF BREAST CANCER PATIENTS: AN ETHNO-NURSING STUDY ON SUNDANESE WOMEN
- DEVELOPMENT OF PERFORMANCE ASSESSMENT INSTRUMENT FOR NURSES BASED ON *WEB* IN INPATIENT UNIT
- RED ROSELLA TEA AND AVOCADO AS SIMVASTATIN THERAPY SUPPORT REDUCE TOTAL CHOLESTEROL
- FACTORS RELATED TO OPEN DEFECATION BEHAVIOR AMONG SCHOOL AGE CHILDREN IN WEST LOMBOK
- BULLYING BEHAVIOUR OF ADOLESCENTS BASED ON GENDER, GANG AND FAMILY
- PREVENTING MEDICATION ERROR BASED ON KNOWLEDGE MANAGEMENT AGAINST ADVERSE EVENT
- JIGSAW PUZZLE IMPROVE FINE MOTOR ABILITIES OF UPPER EXTREMITIES IN POST-STROKE ISCHEMIC CLIENTS

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THE IMPROVEMENT OF STUDENT COMPETENCY IN A CLINICAL STUDY IN INDONESIA: WHAT FACTORS PLAYED AN IMPORTANT ROLE?

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ABSTRACT

Background: The improvement of nursing student competency currently is still an issue for the majority of nursing education institutions in Indonesia. This is due to their partnership with hospitals having not been supported by adequate policies and other factors. **Objectives:** The purpose of this study is to identify the appropriate model for improving student competency in a clinical study. The design used in this study was an observational study with cross-sectional approach. **Methods:** The research design used a cross-sectional approach involving five hospitals and five Universities. Three hundred and eighty-four participants were recruited from these sites. The data was analysed using multiple logistic regression. **Results:** The results showed that the partnership contributed 3.36 times, the patient variations 2.96 times, the job description of the clinical educator 2.30 times, a role model 2.28 times, and the expertise of the faculty educator 2.08 times towards the achievement of student competency in the clinical study. **Conclusions:** It can be concluded that the partnership aspect, patient variation, job description of the clinical educator, role model, the expertise of the faculty educator, and the level of education has a significant role to improve the achievements coming from the level of student competency in the clinical study. The results of this study can be used by nursing educational institutions, hospitals and the government to organise a nursing education model for the more optimal achievement of the student's competencies.

Keywords: partnership, nursing education, competence, hospitals

INTRODUCTION

The Indonesian Hospital Association in 2012 recorded a number of hospitals throughout Indonesia, as many as 1979, with the average annual growth being around 1.14% (Azhary, 2009). The constraints faced by the hospitals includes the lack of competent health resources. This includes the number of nurses, high investment costs, geopolitical issues and public perception. This is still low in relation to the quality of the health services in Indonesia (Azhary, 2009). The growth of the number of hospitals was also followed by a rapid growth in the nursing education institutions (Kurniati and Efendi, 2012). The final report in 2011 from The Health Education Project-Directorate General of Higher Education mentioned that the number of nursing education institutions at a Master's degree level had increased to 12 institutions, and the number of professional education institutions had increased to 112 institutions. The existence of nursing education has not been matched by an adequate arrangement of practices in hospitals, clinics, public health centres, homes for the elderly and the community (AIPNI, 2010). Besides that, the existence of nursing education has not been matched by an increase in the quality and quantity of the lecturer (AIPNI, 2010).

The large number of nursing institution education practices compared with the practice availability currently is still a complicated issue (Myrick and Yonge, 2002). The problem is that the management of clinical education is still poor and the coordination of the achievement of the learning objectives for the students is not going well (Nursalam and Efendi, 2008). The weak management of nursing education is drawn from the results of a survey conducted by The Association of Indonesian Nurses' Educational Institutions and the Indonesian National Nurses Association in 2010 among 33 provinces, which showed that 90% of nursing education had not met the standards of nursing education provision (Health Professional Education Quality-Project, 2011). Education institutions require hospitals to

increase their knowledge and to enhance the skills of students (Canadian Nurses Association, 2014). The hospital requires educational institutions to develop science to improve the quality of care (Davis and Irvine, 2003). One of the problems found in Indonesia is that the hospitals are not capable of facilitating clinical practice to increase the student's competence optimally. This is characterised by weak policy support, a low awareness of the values of partnership and joint ownership, the limited human resources of both parties, and the lack of an ideal nursing practice model and the development of the nursing profession (AIPNI, 2010). The students are often confused when practicing in a hospital because of the unfamiliar situations encountered in hospitals (Myrick and Yonge, 2005; Flanagan, Baldwin and Clarke, 2000). This condition causes the nursing students to find it difficult to develop their professional abilities because the clinical study environment has not been well-established previously (Al-Hussami *et al.*, 2011). Therefore, this situation encourages the researchers to design a clinical learning model that emphasises partnerships between hospitals and educational institutions to obtain an optimum competence level to do with clinical study. This research study combines the Practice-Research Model of Curtin University of Technology (2001) and the Collaborative Clinical Education Epworth Daekin Model (2003) with the theoretical approach of King's Goal Attainment (Alligood & Tomey, 2002). The purpose of this study was to identify the appropriate model for improving student competency in a clinical study.

MATERIALS AND METHODS

The research was conducted in January-September 2013 by a cross-sectional design approach involving five hospitals (Fatmawati Hospital Jakarta, Hasan Sadikin Hospital Bandung, Kariadi Hospital Semarang, Sardjito Hospital Yogyakarta, and Soetomo Hospital Surabaya) and five universities (Universitas Muhammadiyah Jakarta, Universitas Padjadjaran Bandung, Universitas Gadjah Mada Yogyakarta, Universitas Diponegoro Semarang, and Universitas Airlangga Surabaya). The research consisted of variables and demographics such as sex, age and education; support; faculty staff; mastery of the curriculum, the suitability of expertise and provide study guidelines; the fundamental values of collaboration; collegial partnership and collegial ownership; the availability of clinical learning resources; variations inpatient case, clinical facilities, libraries and standards of practice; nurse clinics; support facilities, nursing management, working conditions, career opportunities, job descriptions and role models with the last variable being the achievement of student learning competencies. The research instrument was validated through testing of validity (content and construct) and reliability (Hastono, 2001; Pratiknya, 2011). This research was done to prove that the variables that have been identified are instrumental in shaping a model for improving student competency in a clinical study in a hospital. The process modelling was done using multiple logistic regression as a method for obtaining the statistical relationship between several independent variables and the dependent variable with special features in the form of dichotomous dependent variables (Hastono, 2001; Tabachnick and Fidell, 2001; Supranto, 2004). Prior to this analysis, the researcher selected the candidate variables by conducting a bivariate test.

All of the respondents signed the consent agreement which was conducted voluntarily. This research was approved by the Ethics Committe of Faculty of Nursing Universitas Indonesia and The Health Research Ethics Committee of the Medical Faculty at Diponegoro University. This study also obtained the permission of five hospitals and five universities where the research was conducted.

RESULTS

The demographic aspects showed that there was a high percentage of women (76.8%) with 24.5% age range between 35-40.9 years old. Respondents' higher education made up 64.8% of Nurse graduated with 71.1% of the learner's competence are high (Table 1). Univariate analysis of all of the variables showed that the policy support to the use of a hospital as a clinical study was high at 69%,

Table 1. Details of the variables and respondents (n=384)

Variables	n	%
Gender		
Male	89	23.2
Female	295	76.8
Age		
<35) yrs	92	24
35 – 40.9 yrs	94	24.5
41 – 44,9 yrs	72	18.8
≥ 45 yrs	126	3.8
Education		
Ners	249	64.8
Graduate/Specialist	132	34.4
Doctor	3	0.8
Learners competence		
Low	111	28.9
High	272	71.1
Policy support		
Low	119	31
High	265	69
Faculty members		
Mastery of curriculum		
Low	175	45.6
High	209	54.4
Study guides		
Low	166	43.2
High	218	56.8
Expertise		
Low	172	44.8
High	212	55.2
Values		
Peer partnership		
Low	112	29.2
High	272	70.8
Peer ownership		
Low	186	48.4
High	198	51.6
Hospital facility		
Cases variation		
Low	164	42.7
High	220	57.3
Clinic facility		
Low	92	24
High	292	76
Library		
Low	139	36.2

High	245	63.8
Standard practice		
Low	46	12
High	338	88
Clinical Nurse		
Facility support		
Low	205	53.4
High	179	46.6
Nursing management		
Low	101	26.3
High	283	73.7
Working condition		
Low	214	55.7
High	170	44.3
Career Opportunity		
Low	173	45.1
High	211	54.9
Clarity of job descriptions		
Low	115	29.9
High	269	70.1
Role model		
Low	197	51.3
High	187	48.7

Table 2 - The results of the variable selection of candidates

Variables	p-value
Sex (CC)	1.000
Age (LR)	0.319
Education (LR)	0,001
Clinical Facilities (CC)	0.037
Nursing Management (CC)	0.017
Standard of Competency (CC)	0.677
Role Model (CC)	0.009
Job Description (CC)	0.001
Career (CC)	0.001
Working Conditions (CC)	0.050
Policy Support (CC)	0.084
Curriculum (CC)	0.001
Compliance of Expertise Staff (CC)	0.001
Learning Guide (CC)	0.001
Peer Partnership (CC)	0.001
Peer Ownership (CC)	0.004
Variation of Case (CC)	0.001
Hospital's Library (CC)	0.004
Support Facilities (CC)	0.021

Note: CC= *Continuity Correction*, LR=*Likelihood Ratio*

Table 3 - Multiple logistic regression analysis of the achievement of student competence

Variable	B	S.E.	Wald	Df	Exp (B)
Suitability and expertise of Faculty Staff	0.733	0.282	6.744	1	2.08**
Peer Partnership	1.215	0.272	19.993	1	3.36***
Variation of Case	1.086	0.266	16.670	1	2.96***
Job Description	0.802	0.282	8.092	1	2.23**
Role Model	0.824	0.280	8.662	1	2.28**
Education			4.991	2	
Education(1)	-0.594	0.280	4.495	1	0.55**
Education(2)	-1.113	1.296	0.737	1	0.32
Constant	-1.431	0.359	15.911	1	0.23***

*p<0.05, **p<0.01, ***p<0.001.

while mastery of the curriculum to achieve the specified competencies was 54.4% high. Study guides provided by the faculty were only at 56.8% high, expertise and skills made up 55.2%, peer partnerships 70.8% high, peer ownership 51.6% high, and variations in the cases at 57.3% were categorised as high. Clinic facilities were at a 76% high, libraries were at a 63.8% high, 88% were working at more than the level of standard practice, the support facilities made up 53.4% of high, the implementation of nursing management 73.7% high, working conditions 55.7% low, career opportunities 54.9% high, 70.1% was made up by clarity of the job descriptions being high, and role models were at a 51.3% low.

The selection of the candidate variables used for multiple logistic regression with the chi-square test has been shown in Table 2. Most of the identified variables have been entered as candidate variables except for gender and age. Competency standards has not been included in the multiple logistic regression because it have a value of $p \leq 0.250$.

The final results showed that the variables that contributed to the achievement of the student competencies in the clinical study was partnerships, the expertise of the faculty staff, patient variation, the job description, role models and education (Table 3).

The elements of the collaborative models that have a strong role in relation to the achievement of student competence were role models, job description clarity, suitability, the expertise of the faculty staff, peer partnership values, the availability of a variety of cases and education. The most dominant factor is the peer partnership variable. The suitability and expertise of the faculty staff were 2.08 times more likely to relate to the achievement of competence. The value of peer partnership has 3.36 times to relate to the attainment of competence. The availability of the variation in cases in the clinic 2.96 times relates to the achievement of competence. The job description of the clinical nurse relates by 2.23 times and is significantly associated with the achievement of competence. Role models in the clinic are 2.28 times related and significantly associated with the achievement of competence in the learners. Meanwhile the education up to Master's degree, specialist and doctoral level negatively related to the achievement of student competence. The analytical statistics found out that there were no interaction between the role models and job description. The statistical test also found out that the variable of education was not a confounding variable.

DISCUSSIONS

Partnership between the hospitals and educational institutions is a necessity as a way to increase student competence. Educational institutions play a role in improving the quality of students from the aspect of knowledge, skills and attitudes (Canadian Nurses Association, 2014; Billings and Halstead, 2012). The hospital serves the student as a way to apply knowledge,

training skills and to give them information about the development of knowledge in the hospital context (Grove, Burns and Gray, 2013; Mantzorou, 2004). The policy on educational partnerships with hospitals is effectively used to address health disparities issues, thus requiring all health services in an appropriate partnership to address wider health problems (World Health Organization, 2001, 2010; Canadian Nurses Association, 2014).

The variety of cases in the hospital played an important role in the achievement of student competence. Students, in handling varied cases in nursing, are encouraged to be able to formulate nursing diagnoses with various cases (Chickerella and Lutz, 2010). The more varied cases encountered by the students is a way of increasing their ability to formulate the problem, and the actions that will subsequently be applied. For a clinical educator, the variations in the patient cases will guide the students to think about different aspects. The students not only focus on the completion of the main problem, but think about some of the problem's details simultaneously (Myrick and Yonge, 2002).

The clarity of the job description as a form of clinical educator provides convenience for the nurses that work in the hospitals to play two roles. The first role is to provide quality nursing care. The second role is to provide guidance to students who utilise the hospital where they work to train their clinical skills (Cherry and Jacob, 2014) The arrangement of the job description is important in order for the clinical educator to play both roles. The arrangements of the job description also provide comfort for the clinical educators and are a form of respect for them because it's how they show they are a good nurse (Burns et al., 2006). In this research, the results show that the duty of clinical educator is an important factor that contributes to the achievement of the student's competence (Chickerella and Lutz, 2010).

The role model in this research plays an important role in the achievement of student competence (Bott, Mohide and Lawlor, 2011). Currently, there is a lack of role models in nursing care (AIPNI, 2010). Clinical nurses who are able to act as a role model have not been found much (Health Professional Education Quality-Project, 2011). However, these factors are important to achieving student competence. The literature has shown that the clinical educator is a role model, mentor, and a mirror for the students. How to speak, act and behave, listen, work, and to make a decision in a specific situation in the nursing service would be an example for the students (Adelman-Mullally et al., 2013; Canadian Nurses Association, 2014; Kim and Shin, 2017). The need of role model was compulsory in order to enhance the best outcome of student competency.

The expertise of the clinical educators and faculty is one of the factors that plays an important role in the achievement of student competencies (Myrick and Yonge, 2002). Clinical educators and the faculty staff are registered nurses who have special training or sufficient education to serve as a role model, resource and mentor for nursing students (Yonge et al., 2012). They prepare the students to achieve a particular competence accordance to the hospital's goals. Nurse educators have a unique and important role in the educational process of the nursing profession (Myrick and Yonge, 2005). These findings further support the idea of the critical role of capable clinical educators and faculty members.

CONCLUSIONS

The results of this study have concluded that the model for the improvement of student competency includes partnerships, expertise, and suitability faculty staff, the availability of variation in the cases in the clinic, the job description of the clinical nurse, role models and the education of the clinical and faculty educators. These findings suggest that student competencies in the clinical phase should take into account the complex healthcare environment. Improvement can be made by targeting the identified factors that may contribute to the better achievement of student competency.

REFERENCES

Adelman-Mullally, T. *et al.* (2013) 'The clinical nurse educator as leader', *Nurse education in practice*. Elsevier, 13(1), pp. 29–34.

AIPNI (2010) *Kurikulum Pendidikan Ners; Implementasi Kurikulum KBK*. Jakarta.

Al-Hussami, M. *et al.* (2011) 'Evaluating the Effectiveness of a Clinical Preceptorship Program for Registered Nurses in Jordan', *The Journal of Continuing Education in Nursing*, 42(12), pp. 569–576. doi: 10.3928/00220124-20110901-01.

Alligood & Tomey (2002) *Nursing Theory Aplication and Utilization*. 2nd edn. Mosby, Philadelphia.

Azhary, M. E. (2009) 'Potret Bisnis Rumah Sakit Indonesia. Economic Review', *Economic Review*, (218).

Billings, D. M. and Halstead, J. A. (2012) *Teaching in Nursing, a Guide for Faculty*. Fifth. WB Saunders Company, an imprint of Elsevier inc.

Bott, Mohide and Lawlor (2011) 'A clinical teaching technique for nurse preceptors: The five minute preceptor', *Journal of professional nursing*, 27(1). doi: 10.1016/j.profnurs.2010.09.009.

Burns, C. *et al.* (2006) 'No Title', *Journal of Pediatric Health Care*, 20(3), pp. 172–183. doi: 10.1016/j.pedhc.2005.10.012.

Canadian Nurses Association (2014) *Achieving Excellence in Professional Practice, A guide to preceptorship and mentorship*. Ottawa Canada.

Cherry, B. and Jacob, S. (2014) *Contemporary nursing, Issues, trends & management*. Mosby, an inprint of Elsevier inc.

Chickerella, B. G. and Lutz, W. J. (2010) 'Professional Nurturance: Preceptorships for Undergraduate Nursing Students', *American Journal of Nursing*, 81(1).

Davis and Irvine (2003) *The role of the university hospital*. Los Angeles, San Diego, and San Francisco.

Flanagan, J., Baldwin, S. and Clarke, D. (2000) 'Work-Based Learning as a means of developing and assessing nursing competence', *Journal of Clinical Nursing*, 9(3), pp. 360–368. doi: 10.1046/j.1365-2702.2000.00388.x.

Grove, S. K., Burns, N. and Gray, J. R. (2013) *The practice of nursing research, Appraisal, synthesis and generation of evidence*. Seven. Sounders, an imprint of Elsevier inc.

Hastono, S. P. (2001) *Analisis Data*. Universitas Indonesia.

Health Professional Eduction Qaulity-Project; (2011) *Laporan survey data dasar pendidikan keperawatan*.

Kim, E.-K. and Shin, S. (2017) 'Teaching efficacy of nurses in clinical practice education: A cross-sectional study', *Nurse Education Today*. Elsevier, 54, pp. 64–68.

Kurniati, A. and Efendi, F. (2012) *Kajian Sumber Daya Manusia Kesehatan di Indonesia*, *Salemba Medika*. Jakarta: Salemba Medika. doi: 10.13140/RG.2.1.1440.6804.

Mantzorou (2004) 'Preceptorship in nursing education: is it a viable alternative method for clinical teaching?', pp. 1–10.

Myrick, F. and Yonge, O. (2005) *Nursing Preceptorship Connecting Practice and Education*. Edited by I. Dana. Philadelpia: Lipincott, William & Wilkinsis.

Myrick and Yonge (2002) 'Preceptorship and critical thinking in nursing education', *Journal of Nursing Education*, 41(4), pp. 154–164.

Nursalam, N. and Efendi, F. (2008) *Pendidikan Dalam Keperawatan*. Jakarta: Salemba Medika.

Pratiknya, A. W. (2011) *Dasar-dasar Metodologi Riset Kedokteran dan Kesehatan*. Jakarta: Rajawali Pers.

Supranto, J. (2004) *Analisis Multivariat : Arti dan Interpretasi*. Jakarta: Rineka Cipta.

Tabachnick, B. G. and Fidell, L. S. (2001) *Using Multivariate Statistics*. USA: A Pearson Education Company.

World Health Organization (2001) *Nursing and Midwifery Workforce Management*. SEARO Technical Publication No 27.

World Health Organization (2010) 'Framework for Action on Interprofessional Education & Collaborative Practice', *Health Professional Networks Nursing & Midwifery Human Resources for Health,*.

Yonge, O. *et al.* (2012) 'Preceptorship and Mentorship', 2012, pp. 2–4. doi: 10.1155/2012/790182.

DEVELOPMENT OF A SUPERVISION MODEL BASED ON EXPERIENTIAL LEARNING FOR THE IMPLEMENTATION OF PATIENT SAFETY GOALS AT A TEACHING HOSPITAL IN SURABAYA

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ABSTRACT

Introduction: One of the demands of clients who access health services is patient safety. The hospital is required to maintain and upgrade the patient's safety goals. Nurses as health care providers are at risk of making error and mistakes during their duty which may cause harm to the patient. The purpose of this study was to develop a model of supervision based on experiential learning in the implementation of patient safety goals. **Method:** This research used explanatory survey. The sample was from nurses who were working at a ward UNAIR hospital, one hundred respondents were selected by using stratified random sampling technique. The variables in this research were organizational characteristics, individual characteristics, work characteristics, supervision based on experiential learning and the implementation of patient safety goals. Data collection was through the survey using questionnaires. The data were analyzed using Partial Least Square (PLS). **Result**: There were a significant effect of organizational characteristics, individual characteristics and work characteristic on the supervision based on experiential learning. This result indicated that the improvement of organizational, individual and work characteristics also improved the implementation of supervision based on experiential learning. Supervision based on experiential learning affects the implementation of patient safety goals. **Conclusion:** Supervision based on experiential learning uses four stages: concrete experience, reflective observation, abstract conceptualization and active experimentation. Supervision affects the implementation of patient safety goals by nurses in the hospital.

Keywords: Experiential learning, Patient safety goals, Supervision

INTRODUCTION

Patient safety is a global issue as the community of health-care users is expecting a safe and convenient services. Improving quality and patient safety is a concern for all health care facilities, especially hospitals. The World Health Organization (WHO, 2007) issued a policy on the Nine Life Saving Patient Safety Solution as a system designed to prevent or reduce patient injury and improve patient safety. Some institutes report incidents of patient safety due to errors that could have been prevented through the implementation of patient safety. The data from Patient safety Committee of Hospital in Indonesia September 2006-2011 based on incident type revealed 249 reports of adverse events and 283 reports of near miss events.

Factors contributing to the occurrence of patient safety incidents include individual characteristic factors, the characteristic of work, the physical environment, the interaction between the system and human, organizational and social environment, management, and external environment (Lucian, Of, & So, 2010). According to the study from Sumarni (2013), the most dominant directive function in patient safety implementation is supervision. McKimm (2010) stated that supervision can basically improve patient safety and quality of care. Therefore, supervision is required to improve the hospital staff performance in patient safety. Harmatiwi (2017) in her study found that the disobedience of supervisors on the protocol of supervision was quite high (60%) and the majority of supervisors do with indirect supervision. There are several factors related to the implementation of nurse unit manager's (NUM's) supervision. Zulfikar (2015) in his research reported that leadership style and work experience have a relationship with nursing supervision. The results of Sulastri's study (2002) showed that the characteristics of the organization have a significant relationship with the ability of supervision.

Clinical supervision can improve the quality of nursing services, reduce errors, improve efficiency, improve staff performance,

and reduce burnout rates (Cruz, Carvalho, & Sousa, 2014).

Suyanto (2009) also explained that a nursing supervisor in carrying out his/her daily duties should have the ability to provide guidance and clear instructions, so that, it can be understood by nurses. Clinical supervision is a facilitative process of professional development, contributing to the quality of practice, promoting the safety of care and protection of clients in clinical complex situations. In the supervision process, it is essential that clinical supervisors use appropriate clinical supervision strategies in order to facilitate the development of the supervisee (Pires, Reis, Pereira, & Rocha, 2016). Nurses will comprehend more easily when supported to directly implement the right patient safety goals.

Experiential learning emphasizes a holistic learning model in the learning process. In the reflective observation phase, the learner closely observes the actions performed by others, then reflects the results obtained, hence facilitating ease of understanding. Giving direct examples can encourage the nurse to perform patient safety according to the required standards. The aim of this study was analyzing the effect of organizational characteristics on supervision, analyzing the effect of individual characteristics on supervision, analyzing the effect of work characteristics on supervision, and analyzing the effect of supervision on the implementation of patient safety goals.

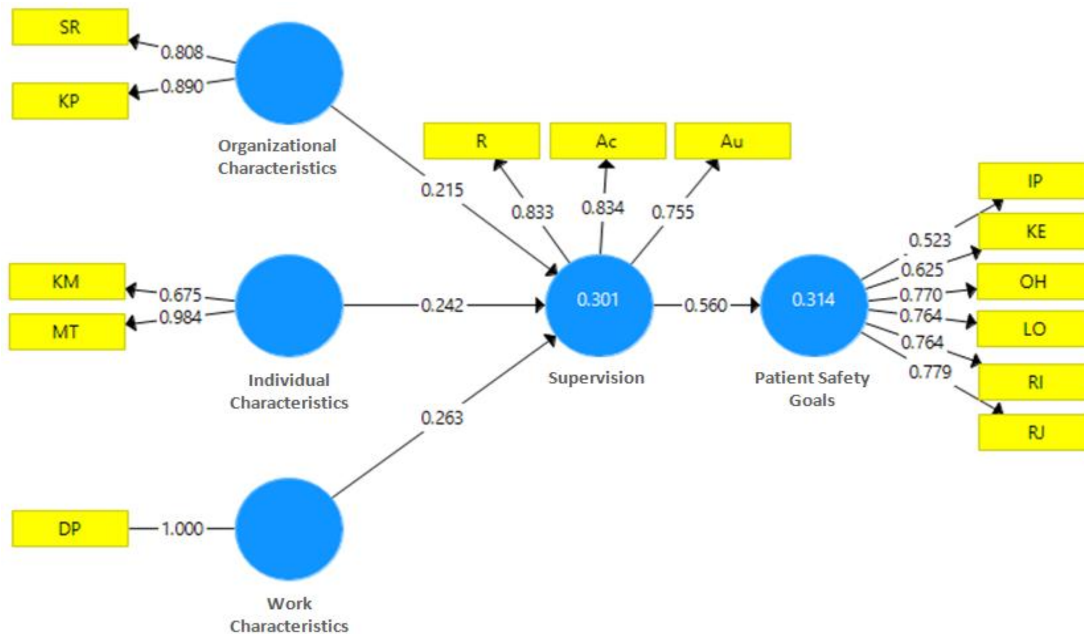
MATERIALS AND METHODS

The population in this study was nurses who work in the inpatient ward of the teaching hospital. They were 112 nurses. The number of sample in this research were determined using a rule of thumb formula. There was 20 variable in this study, so the number of a sample was 100 nurses. The sampling technique in this study using stratified random sampling, it is a sampling method in which the population is first divided into strata, then a simple random sample is taken from each stratum so that it can reach a representative sample. The grouping of strata used in this study is based on the length of work in the hospital. The strata were divided into, less than 1 year, 1-3 years, and more than 3 years. The study was conducted in the inpatient ward of teaching hospital in Surabaya from March - April 2017.

The variables in this research are, organizational characteristic, individual characteristic, work characteristic, supervision based experiential learning and the implementation of patient safety goals. Organizational characteristic consists of two sub-variables, they are reward system and leadership. Individual characteristics consist of two sub-variables, namely capability and motivation. The work characteristic of this study is job design and work schedule. In the variable of supervision, the four experiential learning stages are observed in the implementation of supervision. The four stages consist of concrete experience, reflective observation, abstract conceptualization, and active experimentation. The patient safety implementation variables consist of sub-variables, identifying patient correctly, improving effective communication, improving the safety of high-alert medications, ensuring safe surgery, reducing the risk of healthcare-associated infections, and reducing the risk of a patient from falls. The data were collected by using questionnaire made by the researcher. The test of validity and reliability of the questionnaire were done, and the question which was not valid have been removed from it. The data analysis used Partial Least Square (PLS).

RESULTS

Most of the nurses stated that reward system was in moderate category (79%, n=100), and leadership also in moderate category (73%). These two indicators were included in organizational characteristics. Individual characteristics consist of capability and motivation. This study found that capability in moderate category (62%), and motivation also in moderate category (72%). For the work characteristic, most of the nurses that job design was in moderate level (70%).



Picture 1. Outer loading factor results analysis using Partial Least Square (PLS)

The model in this study determined that the indicator is valid if the value of outer loading is more than 0.4 (Vinzi et al in Sofyani, 2010). Invalid indicator includes work schedule on work characteristics variable (X3.1).

The other indicators were declared valid, it were reward system, leadership, capability, motivation, job design, supervision, and implementation of patient safety included: identifying patient correctly, improving effective communication, improving the safety of high-alert medications, ensuring safe surgery, reducing the risk of health care-associated infections, and reducing the risk of patient harm resulting from falls.

The analysis of hypothesis testing used PLS, and the results as in table 1. The result of the analysis shows that there was significant affect of organizational characteristics, individual characteristics and work characteristic to the supervision based on experiential learning with the p-value were 0.005, 0.011 and 0.003. Supervision based on experiential learning also had affected the implementation of patient safety goals with the p-value 0.000. That patient safety goals consist of identifying patient correctly, improving effective communication, improving the safety of high-alert medications, ensuring safe surgery, reducing the risk of health care-associated infections, and reducing the risk of patient harm resulting from falls.

Table 1. The Result of Analysis

No	Variable	Path Coefficients	T Statistic	*p*-value	Conclusion
1	The influence of organizational characteristics to supervision based experiential learssning	0.215	2.568	0.005	Significant
2	The influence of individual characteristics to supervision based experiential learning	0.242	2.829	0.011	Significant
3	The influence of work characteristics to supervision based experiential learning	0.263	2.974	0.003	Significant
4	The Influence of supervision model based experiential learning to implementation of patient safety goals	0.560	8.043	0.000	Significant

DISCUSSION

The influence of organizational characteristics on supervision based on experiential learning

Organizational characteristics consist of rewards systems and leadership. In this study, organizational characteristics contributed to the implementation of supervision based on experiential learning by the NUM.

The rewards is defined as a stimulus to improve nurse's performance in providing nursing care. Giving reward is a statement that explains what hospital wants to give to the staff in the long term to develop and implement policies, practices and reward system process that support the achievement of goals and needs (Brown, 2001 in Nursalam 2016). In this study, nurse’s perceptions about the hospital's reward system were mostly in quite satisfaction level. The organization or employer should reward the staff by award presentation, advancement or promotion (Mangkunegara, 2005). This study, that most of the nurses had perceived moderately about the reward system. The result of this study was consistent with Mandagi (2015) that stated the reward system had affected to the nurse's performance, and the reward could become the effective motivator to the nurses work.

The definition of leadership is the activity or art that affects others to work together based on the ability of the person to guide others in achieving the organizational goals. Leadership is one of the most important in the management function, especially in directing and controlling functions. Melo (2015) in his study stated that a NUM who apply all of the management roles can improve the nurse's satisfaction in supervision done by NUM.

The influence of individual characteristics on supervision based on experiential learning

The indicators that contribute to individual characteristics include capability and motivation. This characteristic influence on supervision based experiential learning is done by the NUM The higher capability and motivation caused the better supervision by NUM.A person's motivation is very influential on the performance that can be achieved in his job because the support will make the person doing the thing for achieving their goals (Suyanto, 2009). Motivation level of nurses in this study is found to be in a moderate category. the NUMis motivated to conduct supervision based on experiential learning in order to achieve the task and management functions and vice versa.

Many aspects can be assessed from the variables of capability, including cognitive, affective, and psychomotor abilities. This study also found that motivation level influences the ability to supervision implementation done by the NUM. This is consistent with the study conducted by Wahyuningsih (2015), which states that the ability to work has a significant positive influence on the nurse’s performance, and also for the NUM.

The Influence of supervision model based on experiential learning in the implementation of patient safety goal

The result of this study stated that supervision model based experiential learning was significantly affected the implementation of patient safety goals. In this supervision, the supervisor observed implementation of patient safety goals done by nurses based on responsibility, accountability and authority aspects. Each aspect followed by experiential learning process consists of concrete experience, reflective observation, abstract conceptualization, and active experimentation.

Supervision can influence nurse’s performance on implementation of patient safety goals. This is in accordance with the previous study by Hastuti (2014), which reported a significant relationship between nurse’s perception about supervision with nurse’s performance. This is also consistent with the study conducted by Amsrud et al (2015), which revealed that clinical supervision definitely influences the development of important skills for patient safety care, Brunero et al (2010) also asserted that clinical supervision promotes professional accountability, skill, and knowledge development. Clinical supervision was more positive evaluation where the sessions running for over one hour and took place on at least a once a month (Edwards, Hannigan, & Fothergill, 2005). Previous research, show there was a relationship between the NUM conducting

supervision of the nurse in the implementation of patient safety, the nurse will be able to implement patient safety well if they are given optimal supervision by NUM (Ernawati et al, 2014).

CONCLUSIONS

The supervision model based on experiential learning was affected by the reward system, leadership, capability, motivation, and job design. Supervision based on experiential learning improved the implementation of patient safety goals by nurses included identifying patient correctly, improving effective communication, improving the safety of high-alert medications, ensuring safe surgery, reducing the risk of healthcare-associated infections, and reducing the risk of patient harm resulting from falls. This supervision model is expected to be applied in hospitals to improve performance in the implementation of patient safety goals and prevent the error incident of patient safety.

REFERENCES

Amsrud, K.E., Lyberg, A., & severinsson, E. (2015). The influence of clinical supervision and its potential for enhancing patient safety-Undergraduate nursing students' views, *Journal of Nursing Education and Practice*, 5(6)

Brunero, S., & Parbury, J.S. (2010). The Effectiveness of Clinical Supervision in Nursing: an Evidenced-based literature review. *Australian Journal of Advanced Nursing*, 25(3), 86-94

Cruz, S., Carvalho, A. L., & Sousa, P. (2014). Clinical Supervision : Priority Strategy to a Better Health Clinical supervision : priority strategy to a better health. *Procedia - Social and Behavioral Sciences*, *112*(February), 97–101. https://doi.org/ 10.1016/j.sbspro.2014.01.1143

Edwards, D., Hannigan, B., & Fothergill, A. (2005). Factors influencing the effectiveness of clinical supervision, (August). https://doi.org/10.1111/j.1365-2850.2005.00851.x

Ernawati, E, Asih T.R., Wiyanto, S. (2014). Penerapan *Hand Hygiene* Perawat di Ruang Rawat Inap Rumah Sakit. *Jurnal Kedokteran Brawijaya*, 28 (1), 89-94

Harmatiwi, DD, Sumaryani, S., Rosa, EM. (2017).Evaluasi Pelaksanaan Supervisi Keperawatan di Rumah Sakit Umum Daerah Panembahan Senopati Bantul. *Jurnal Medicoeticolegal dan Manajemen Rumah Sakit*. 6 (1). DOI: 10.18196/jmmr.6126.

Hastuti, A.T. (2014). Hubungan Persepsi Perawat Pelaksana Tentang Kemampuan Supervisi Kepala Ruang Dengan Kinerja Perawat Di Instalasi Rawat Inap Rumah Umum Daerah Kota Semarang. *Fikkes Jurnal Keperawatan*, 7(2), 118-129

Lucian, L., Of, P., & So, M. (2010). Error in Medicine.

Mangkunegara. (2005). *Kinerja SDM. Cetakan1*. Bandung: PT RefikaAditama

McKimm, J., & Rebecca, V. (2010). Clinical Teaching Made Easy: Mentoring. British Journal of Hospital Medicine, 71(2), 106

Melo, R. C. C. P. (2015) 'Leadership and nurses ' satisfaction with supervision', 4(4), pp. 57–63. doi: 10.5430/jha. v4n4p57.

Moon, J.A. (2004). *A Handbook of Reflectiveand Experiential Learning, Theory and Practice*. NewYork: Routledge Falmer Taylor & Francis group

Nursalam. (2016). *Manajemen Keperawatan Aplikasi dalam Praktik Keperawatan Profesional, edisi 5*. Jakarta: Penerbit Salemba Medika

Sofyani, H. (2010). Modul Praktik Partial Least Square (PLS). Universitas Muhammadiyah Yogyakarta

Sulastri, T. (2002). *Faktor-faktor yang Berhubungan dengan Kemampuan Supervisi yang Dipersepsikan oleh Perawat Manajer di RSUD Pasar Rebo Jakarta*. (Tesis, Universitas Indonesia)

Sumarni, T. (2013). *Hubungan Pelaksanaan Fungsi Pengarahan Kepala Ruangan dengan Penerapan Patient Safety di Rawat Inap RSUD Padang Panjang*. Universitas Andalas

Suyanto.(2009). *Mengenal Kepemimpinan dan Manajemen Keperawatan di Rumah Sakit.* Jogjakarta: Mitra Cendekia

Pires, R., Reis, M., Pereira, F., & Rocha, I. (2016). Most Relevant Clinical Supervision Strategies In Nursing Practice.

Wahyuningsih, R.T. (2015). *Pengaruh Kemampuan Kerja, Kompensasi Dan Motivasi Terhadap Kinerja Perawat Di Instalasi Rawat Inap Rumah Sakit Daerah Balung Kabupaten Jember.* Universitas Jember

WHO. Nine Life Saving Patient Safety Solution (2007). Retrieved from http://www.who.int

Zulfikar. (2015). *Faktor-faktor yang Mempengaruhi Supervisi Kepala Ruang di Rumah Sakit Umum Daerah Dr. Zainoel Abidin Banda Aceh*. Universitas Syiah Kuala

IMPROVING THE SERVICES QUALITY OF EDUCATIONAL STAFF BASED ON SATISFACTION AND LOYALTY ANALYSIS OF NURSING STUDENTS

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ABSTRACT

Introduction: Educational staff services play a role in determining the quality of education. Service quality is able to provide satisfaction for students. Students who were satisfied with the perceived quality will develop student loyalty to the institution. The purpose of this study was to assess the effect of educational staff service quality with the satisfaction and loyalty of nursing students so that the educational institutions as service providers are able to provide the best service and survive in the midst of competition. **Method:** The study was an explanative survey with a cross-sectional design. Data collection was conducted using both quantitative (questionnaires) and qualitative (Focus Group discussion/FGD) methods. This study used proportional random sampling, with 110 students as samples. The variables in this research were customer expectations, perceived quality, student satisfaction and loyalty. The data was collected by a questionnaire and analyzed by linear regression, while FGD was conducted in two different groups (students and staff's managers). **Result:** The result of the study explains the influence of student expectations on the perceived quality of the educational staff with a p-value = 0,002. There was no influence of student expectation on student satisfaction with a p-value = 0,156. The influence of the perceived quality of the educational staff towards student satisfaction had a p-value = 0,000. The influence of student satisfaction on student loyalty had a p-value = 0,000. **Conclusion:** The fulfilment of student expectations will have a positive impact on perceived quality. Furthermore, the positively perceived quality will create student satisfaction and student loyalty towards the educational institutions. For further research, it is suggested to examine the effect of satisfaction on student complaints.

Keywords: customer expectation; educational staff; loyalty; perceived quality; satisfaction

INTRODUCTION

Education is a conscious and well-planned effort to create an atmosphere of learning in the learning process so that learners can actively develop their self-potential to have spiritual strength, self-control, personality, intelligence, a noble character, and the necessary skills that they, society, the nation and the state needs (RI, 2012). Educators and education staff are two professions that are closely related to the world of education, although the scope of the two is different. Educators and education staff have roles and positions that are equally important in the context of education (learning). This is in accordance with Law no.20, Article 40, Paragraph (2) 2003 where educators and education staff are obliged to create a meaningful, fun, creative, dynamic and dialogical education atmosphere and have a professional commitment to improving the quality of education. Academic institutions are always expected to improve the academic services offered so as to improve the student's performance (Goga, Kuyoro and Goga, 2015). Educational institutions need to implement appropriate management so that the educational environment can be modified as needed (Khachian *et al.*, 2013). The globalization era is a challenge for universities preparing their graduates to be able to compete in the struggles of the job market and to produce innovative and creative graduates (Prasetyaningrum, 2009). Under these conditions, educational institutions are finding it necessary to recognize and meet the needs of consumers in providing quality services (Muzakiyah, Syukri and Setyaningsih, 2011).

Data from the quality assurance team at STIKes Ganesha Husada Kediri in 2016, in their assessment on their educators (lecturers), showed that 26% were in a very good category and 74% were in a good category. The assessment of the educational staff had never been done before. The results of the initial survey using questionnaires on October 17, 2016, showed that 4 out of 10 nursing students felt that the service personnel at STIKes Ganesha Husada Kediri are below their expectations. Students, as the most important element in educational institutions, need to be heard regarding whether the service that has been given is below their expectations or not. Customer satisfaction is expected to affect loyalty (Rinala, Yudana and Natajaya, 2013). Data from the new admissions team at STIKes Ganesha Husada Kediri in 2016 showed that the number of registered students had

decreased by 14% from 175 to 151 students.

According to Tjiptono (2003), the creation of consumer satisfaction can provide several benefits such as a harmonious relationship between service owners and consumers, providing a good basis for re-purchase and the creation of consumer loyalty, and forming a recommendation from word of mouth services. If there is dissatisfaction from the concerned student, it can have a bad impact in the form of demands or complaints, even lawsuits and spreading it in mass media. If this happens, it is very harmful to the reputation of the concerned college (Suardana, I., 2007). The competitive situation between universities' demands requires the institutions to pay attention to the quality in order to be able to excel in the competition (Ayu, Srinadi and Eka, 2008). Universities should take anticipatory steps to face the competition and to be responsible for exploring and improving all aspects of the owned services (Ayu, Srinadi and Eka, 2008).

Quality services can be identified through customer satisfaction, especially from the students (Ayu, Srinadi and Eka, 2008). Tjiptono (2011) mentioned that quality has a close relationship with the satisfaction of the customer. Quality provides a boost to the consumers to forge strong bonds with the service owners. In the long term, such ties allow the service owners to understand the expectations of consumers and their needs (Tjiptono, 2011). Institutions should be able to improve student satisfaction by improving the quality of the services offered, making the good quality services better and improving the weaker ones. The priority is considered to be student satisfaction in order to achieve student loyalty. This study has examined customer expectations (student), perceived quality of the supporting educational staff, student satisfaction, and student loyalty. The aim of this study was to assess the effect of educational staff service quality on the satisfaction and loyalty of the nursing students.

MATERIALS AND METHODS

The research method used was an explanative survey with a cross-sectional approach. The study was conducted at STIKes Ganesha Husada Kediri on 13th to the 31st March 2017. The research population was all of the nursing students at STIKes Ganesha Husada Kediri, which was many as 151 students. The sampling technique used in this study was proportional random sampling, with a sample size of 110 students based on sample size formula. The data was collected by using a questionnaire. The Questionnaire had been tested for validity and reliability with the Pearson and Cronbach Alpha tests. The collected data were analysed by using linear regression. The research variables include customer expectations (student) and perceived quality, student satisfaction, and student loyalty. A focus group discussion (FGD) was conducted after the quantitative data collection was completed in two different groups; the students and the student's services manager. The implementation of FGD for students was on a different schedule than that of the managers. This study passed the ethical test conducted on March 8th, 2017 at the Faculty of Nursing Universitas Airlangga Surabaya with No 355-KEPK.

RESULTS

This section will present the results of the study based on student expectations, perceived service, satisfaction and the loyalty of the students along with the influence of the variables. The total respondents were 110 students with the majority being female (67%). From this number, the majority said that they were between their second and fifth year of being students. From Table 1, it can be explained that the customer expectation variable fulfilled as many as 55.5% of the respondents. The perceived quality variable on technical quality, functional quality, and amenity was also quite good, with 50.9%, 51.8%, and 51.8% respectively.

Student satisfaction with the services provided by the majority in the category of quite satisfied was mentioned by 52.7% of the students. The loyalty variable shows that the majority of students (94.5%) are willing to recommend the school to the community and expect the continuity of relationship by 64.5%. The students who proud getting a degree in nursing school were 66.4%.

Table 2 indicated that as many as 36 students thought their fulfilment and the value of the services as being good, and as many as 20 students felt unfulfilled and thought that the valued services are felt fair enough. As many as 25 students thought that the assessment

service was felt fair enough, and as many as 29 of the students thought that their expectations were unfulfilled and judged the perceived service to be fair enough.

Table 3 is the result of the tabulation that indicates that as many as 48 students perceive the service as being good and feeling satisfied, as many as four students perceive the service being quite satisfied and as many as 50 students who assessed the service felt sufficiently satisfied with the service.

Table 4 presents the influence of the research variables. There was a significant correlation between customer expectation and perceived quality. Customer expectation has no direct correlation with student satisfaction, but instead through the variable between the perceived qualities. Perceived quality has a very strong correlation (β: 0,910) and is positive towards student satisfaction. Student satisfaction has a strong enough correlation (β; 0,456) to student loyalty. Fulfilling customer expectations will, therefore, enhance perceived quality, which will have an impact on increasing student satisfaction and increasing student loyalty to the institution.

DISCUSSION

The Correlation of customer expectation to perceived quality of student

The direct correlation of customer expectation towards the perceived quality by way of the linear regression test indicates if there was an increase in student expectations, there would be a requirement for improvement of the perceived quality of the service based on the student's perception. This was in accordance with the concept of the American Customer Satisfaction Index which states that there is a significant correlation between student expectation's on the perceived quality service (Fornell *et al.*, 1996).

The expectation of the customer is the consumer's belief that a product has certain desired attributes and it is the prediction of the consumer towards the possible attributes or performance of a given product (Tanuwijaya, 2012). Woodruff, R.B. & Gardial (2002) used the term "Comparison Standard" against the customer's expectation; they compared between the service product used with the standard that must be received.

Perceived quality is an important element for consumer decision-making, and as a consequence, consumers will compare the quality according to the owned category of the product compared to the price paid (Yee, C.J. & San, 2011). The quality of educational staff services is assessed based on the quality distribution of the services. According to Donabedian A., 1980 in (Supriyanto, 2010), there are 3 categories that are technical quality, functional quality, and amenity. Technical quality in this study assessed the duties and functions of each educational staff based on Ganesha Husada Kediri Foundation Decree No.01/YGH-K/XII/2013. Functional Quality assessed the reliability, assurance, tangible, empathy and responsiveness of the educational staff. Amenity is based on the comfort and convenience in relation to the received service.

A well-fulfilled expectation will encourage an assessment of the service, and judgment as well. From Table 2, we saw that most of the students' expectations were fulfilled and that they gave positive feedback of the perceived service. However, there was an unfulfilled expectation that needs to be analysed by the academic manager such as the slow distribution of certificates by the academic administrative staff. FGD revealed that the slow certificate distribution was happening because the Hospital does not immediately send a certificate of practice to the associated institution.

The existence of the correlation of expectations on perceived quality is supported by a statement from Fornell et al., (1996) which stated that customer expectation is a forecast of the company's ability to provide good quality in the future and positively relates to perceived quality. Kunanusorn (2014) also supported the findings by stating that the quality of service is centred on the efforts to meet the needs, desires, and accuracy of delivery to balance with the customer expectations. Trimurthy (2008) stated that quality is a fundamental decision-making factor determined by the consumers based on the consumer's actual experience of a product or service based on its measurement results, expectations, the promised services, awareness and objectivity.

Table 1. Research variables (n = 110)

No	Variables	Fulfilled		Unfulfilled		Total	
		n	%	n	%	n	%
1.	Customer Expectation	61	55.5	49	45.5	110	100%
2.	Perceived Quality	Good		Enough		Total	
		n	%	n	%	n	%
	a. Technical Quality	56	50.9	54	49.1	110	100%
	b. Functional Quality	57	51.8	53	48.2	110	100%
	c. Amenity	57	51.8	53	48.2	110	100%
3.	Student Satisfaction	52	47.3	58	52.7	110	100%
4.	Student Loyalty	Loyal		Disloyal		Total	
		n	%	n	%	n	%
	a. Advocate/Recommendation	106	94.5	6	5.5	110	100%
	b. Continuity of relationship	71	64.5	39	35.5	110	100%
	c. Proud	73	66.4	37	34.6	110	100%

Table 2. Cross-tabulation result of Customer Expectation, Perceived Quality, and Student Satisfaction

Customer Expectation	Perceived Quality		Total	Student Satisfaction		Total
	Good	Enough		Good	Enough	
Fulfilled	36	25	61	32	29	52
Unfulfilled	20	29	49	20	29	58
Total	56	54	110	71	39	110

Table 3. Cross-tabulation result of Perceived Quality, Student Satisfaction, and Student Loyalty

Student Satisfaction	Perceived Quality		Total	Student Loyalty		Total
	Good	Enough		Loyal	Disloyal	
Good	48	8	56	44	8	52
Enough	4	50	58	27	31	58
Total	52	58	110	71	39	110

Table 4 Statistic test of correlations of Customer Expectation, Perceived Quality, Student's Satisfaction and Student's Loyalty at STIKes Ganesha Husada Kediri

Variables		p-value	β
Customer Expectation	Perceived Quality	0,002	0,290
Customer Expectation	Student's Satisfaction	0,156	-0,065
Perceived Quality	Student's Satisfaction	0,000	0,910
Student's Satisfaction	Student's Loyalty	0,000	0,456

The correlation of customer expectation to nursing student satisfaction

This study shows no direct correlation between customer expectations and student satisfaction. Tse and Wilton (1988) in Tjiptono (2008) stated that customer satisfaction is directly proportional to customer loyalty, where customer satisfaction is determined by two main things: expectations and perceived performance. If the perceived performance exceeds expectations, then the customer will be satisfied. Otherwise, the customer will not be satisfied. Oliver (2013) agreed with the concept of Tse and Wilton by stating that the process of satisfaction begins after the consumer has obtained a standard of expectation or an example of the product or service performance.

Woodruff, R.B. & Gardial (2002) stated that satisfaction is a gap between customer expectations and expected quality standards, where satisfaction can be felt positively or negatively based on the impression experienced by the customers. This condition occurs as a result of the interaction between service providers and customers.

Kotler (2007) stated that satisfaction is the level of one's satisfaction after comparing the perceived results with their expectations. Conversely, if the student's expectations are not fulfilled, then the level of student satisfaction with the institution will also decrease.

The results of this study are consistent with the previous research conducted at several universities in Tehran showing that student expectations do not have a significant effect on student satisfaction and the values that the students understand. The quality of service has a direct and meaningful effect on student satisfaction (Kheiry, 2012).

The correlation of the expected quality of the students does not directly affect the satisfaction but instead works through the intermediate variable, which is the students' perceived judgment on the educational personnel services. Some of the literature does mention that customer's satisfaction or that of the patient is determined by the accepted quality examiner (Strasse and Davis, 1991).

The correlation of perceived quality to nursing student satisfaction

The correlation of perceived quality to student satisfaction within the linear regression test was indicated by an increase in the perceived quality of the students. There will, therefore, be an increase in student satisfaction at STIKes Ganesha Husada Kediri. This is in accordance with the concept of ACSI (American Customer Satisfaction Index) Fornel which states that there is a significant correlation between perceived quality towards overall customer satisfaction (Fornell *et al.*, 1996).

According to the results of a research study on students in Singapore, it showed that service quality judged from the perspective of functional and technical quality has a positive influence on the satisfaction that impacts on WOM (Word of Mouth) positively (Teo and Soutar, 2012). Kheiry (2012) stated that the quality of the service perceived by students has a direct effect on student satisfaction and value.

According to Durianto (2004) on Suprapti (2010), perceived quality is a consumer perception of the overall quality and superiority of a product or service similar to its intended purpose. Positive perceived quality will drive the consumer's decision to purchase and create loyalty towards the product. Furthermore, considering that consumer perception can be forecasted, if the perceived quality is negative then the product will not be liked and will not last long in the market. Conversely, if the consumer's perceived quality is positive then the product will be liked, and so the consumer will make the decision to buy the product.

The correlation of student satisfaction to the loyalty of nursing student

The correlation of student satisfaction to student loyalty showed that when student satisfaction is increased, it will be followed by student loyalty at STIKes Ganesha Husada Kediri. This is in accordance with the concept of ACSI (American Customer Satisfaction Index) which states that there is significant influence between customer satisfaction and customer loyalty (Fornell *et al.*, 1996).

The ultimate goal of a company that pursues consumer loyalty is the achievement of increased usage, the interest in repurchasing the same item, continuing or always using the same service product and choosing the brand of the service product in the future (Kotler and Keller, 2007). Consumer loyalty is a manifestation and continuation of consumer satisfaction (Rahadian, 2006).

Satisfied students will be loyal to the institution. This is in accordance with Table 4 where most students are satisfied and have good loyalty towards the institution. Helgesen & Nesset (2007) stated that student satisfaction has the strongest correlation compared to other factors towards student loyalty and that the effect is three times greater than the image and brand image of the college towards student loyalty.

Satisfied and loyal customers are the chance to gain new opportunities. Maintaining existing customers will generally be more profitable than turnover. as the cost to attract new customers can be five times the cost of maintaining an existing customer (Kotler and Keller, 2007). Thus, keeping the existing customers is the same as maintaining the survival of the company. In terms of education, to maintain the loyalty of community in the nursing college is similar with maintaining the continuity of the nursing education process helps to improve the quality of nursing services to the community.

CONCLUSIONS

The quality expectation and assessment of the educational staff is still quite good, as well as student satisfaction and loyalty. There is a positive correlation between customer expectation and perceived quality. However, customer expectation has no direct effect on student satisfaction but instead works through the perceived quality intermediary variable. This means that when assessing student satisfaction, one should simply use the assessment variable. The student's satisfaction has a very strong and positive impact on the student’s loyalty. The higher the fulfilment of the customer’s expectations, the perceived quality will result in a better judgment, and student satisfaction will increase, and ultimately affect the high loyalty of the students towards the institution.

Educational institutions must continuously improve the quality of their services to students as a whole in terms of the educational staff, educators (lecturers), and infrastructure facilities. Further research is expected to examine the influence of student satisfaction with student complaints.

REFERENCES

Ayu, I. G., Srinadi, M. and Eka, P. (2008) ‘Faktor-Faktor Penentu Kepuasan Mahasiswa Terhadap Pelayanan Fakultas Sebagai Lembaga Pendidikan’, *Cakrawala Pendidikan*, XXVII(3), pp. 217–231.

Fornell, C. *et al.* (1996) ‘The American Customer Satisfaction Index: Nature, Purpose, and Findings’, *Journal of Marketing*, 60(4), pp. 7–18.

Goga, M., Kuyoro, S. and Goga, N. (2015) ‘A Recommender for Improving the Student Academic Performance’, *Procedia - Social and Behavioral Sciences*. Elsevier, 180, pp. 1481–1488. doi: 10.1016/J.SBSPRO.2015.02.296.

Helgesen, Ø. and Nesset, E. (2007) ‘What Accounts for Students’ Loyalty? Some Field Study Evidence’, *International Journal of Educational Management*, 21(2), pp. 126–143. doi: 10.1108/09513540710729926.

Khachian, A. *et al.* (2013) ‘The Role of the Organizational Internal Environment in the Establishment of Change Management in Nursing and Midwifery schools’, in *Procedia - Social and Behavioral Sciences*. Elsevier, pp. 308–316. doi: 10.1016/J.SBSPRO.2013.09.195.

Kheiry, B. (2012) ‘University Intellectual Image Impact on Satisfaction and Loyalty of Students (Tehran Selected Universities)’, *African Journal of Business Management*, 6(37), pp. 10205–10211. doi: 10.5897/AJBM11.434.

Kotler, P. and Keller, K. L. (2007) *Marketing Management*. New Jersey: Pearson Education Inc.

Kunanusorn, A. and D. P. (2014) ‘The Mediating Effect of Job Satisfaction on Student Loyalty to Higher Institution’, *European Scientific Journal*, 1(October), pp. 449–464.

Muzakiyah, Syukri, S. H. A. and Setyaningsih, I. (2011) ‘Analisis Kualitas Pelayanan Pada Bagian Tata Usaha Berdasarkan Tingkat Kepuasan Mahasiswa’, *Ilmiah Teknik Industri*, 10(2), pp. 95–100.

Oliver, R. L. (2013) ‘Whence Consumer Loyalty ?’, *Journal of Marketing*, 63(1999), pp. 33–44.

Prasetyaningrum, I. D. (2009) *Analisis Pengaruh Pembelajaran dan Kualitas Pelayanan terhadap Kepuasan Mahasiswa dan Loyalitas Mahasiswa (Studi Kasus pada Undaris Ungaran)*, *Tesis*. Universitas Diponegoro Semarang.

Rahadian, S. S. (2006) *Analisis Pengaruh Loyalitas Pelanggan dan Perilaku Mencari Variasi Terhadap Perpindahan Merek*. Universitas Diponegoro Semarang.

RI (2012) *Undang-Undang Republik Indonesia Nomor 12 Tahun 2012 tentang Pendidikan Tinggi*.

Rinala, I. N., Yudana, I. M. and Natajaya, I. N. (2013) ‘Pengaruh Kualitas Pelayanan Akademik Terhadap Kepuasan dan Loyalitas Mahasiswa Pada Sekolah Tinggi Pariwisata Nusa Dua Bali’, *e-Journal Pascasarjana Universitas Pendidikan Ganesha*, 4.

Strasse, S. and Davis, R. (1991) *Measuring Patient Satisfaction For Improved Patient Service (Management Series)*. Michigan: American College of Healthcare Executives.

Suardana, I., M. (2007) 'Analisis Kepuasan Mahasiswa Terhadap Pelayanan Jasa Pendidikan Sekolah Tinggi Ilmu Ekonomi', *Jurnal Valid*, 4(1).

Suprapti (2010) *Analisis Pengaruh Brand Awareness, Perceived Value, Organizational Association an Perceived Quality terhadap Keputusan Pembelian Konsumen*. Universitas Diponegoro Semarang.

Supriyanto, S. (2010) *Manajemen Mutu Pelayanan Kesehatan*. Surabaya: Health Advocacy Yayasan Pemberdayaan Kesehatan Masyarakat.

Tanuwijaya, A. (2012) 'Pengaruh Customer Perceived Value terhadap Customer Loyalty melalui Customer Satisfaction pada Secong Royal Plaza Surabaya', *Jurnal Universitas Katolik Surabaya*, 1(2), pp. 1–6.

Teo, R. and Soutar, G. N. (2012) 'Word of Mouth Antecedents in an Educational Context: a Singaporean Study', *International Journal of Educational Management*, 26(7), pp. 678–695. doi: 10.1108/09513541211263746.

Tjiptono, F. (2003) *Total Quality Management*. Yogyakarta: Andi Offset.

Tjiptono, F. (2008) *Strategi Pemasaran*. Yogyakarta: Andi Offset.

Tjiptono, F. (2011) *Service, Quality Satisfaction*. Yogyakarta: Andi Offset.

Trimurthy, I. G. A. (2008) *Analisa Hubungan Persepsi Pasien tentang Mutu Pelayanan dengan Minat Pemanfaatan Ulang Palayanan Rawat Jalan di Puskesmas Pandanaran Kota Semarang*. Universitas Diponegoro Semarang.

Woodruff, R. and Gardial, S. (2002) 'Exploring the Phenomenon of Customers' Desire Value Change in a Business to Business Context', *Journal of Marketing*, 66(4), pp. 102–117.

Yee, C.J. & San, N. C. (2011) 'Consumers Perceived Quality, Perceive Value, and Perceived Risk Towards Purchase Decision on Automobile', *American Journal of Economics and Business Administration*, 3(1), pp. 47–57.

DEVELOPMENT OF MODEL ON MOTHERS SELF-EFFICACY IN PREVENTING RECURRENCE OF NON-PNEUMONIA ACUTE RESPIRATORY INFECTION AMONG TODDLERS

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ABSTRACT

Introduction: Acute Respiratory Infection (ARI) is the leading cause of morbidity and mortality in children. A cough and cold diseases such as rhinitis, pharyngitis, tonsillitis and other upper respiratory diseases are classified as non-pneumonia. ARIs that are not appropriately handled will affect the lung tissue and cause severity and even death. The purpose of this study is to develop a model of self-efficacy (SE) among mother to prevent recurrent (PR) non pneumonia (NP)-ARI on toddlers based on the integration of Precede-Proceed Model and Health Belief Model. **Method:** This study used cross-sectional design. The population were a mother with a toddler in Tanggalrejo Village of Mojoagung Jombang. A hundred toddler's mothers were recruited as samples by cluster sampling. Variables in this study were predisposing-enabling-reinforcing factors, main constructs of perceived (MCP), perceived threat, SE and PRNP-ARI. Data were collected using questionnaire, and Focus Group Discussion then analyzed using Partial Least Square (PLS). **Results:** The SE improvement model for the PRNP-ARI was formed from predisposing-enabling-reinforcing factors, MCP, perceived threat, and maternal SE. The greatest effect was on MCP against a perceived threat with T statistic value = 11.07. **Conclusion and recommendation:** Increasing SE of toddler's mother can be done by educating mother about ARI concept, conventional ARI treatment, environmental modification, benefits of mask use, clean and healthy life behavior, proper hand washing, nutrition feeding, exclusive breastfeeding, stress management; create peer support group for toddlers mother; and optimizing the role of health officers and family support.

Keywords: Mother Self-Efficacy; Prevention Non-Pneumonia ARI

INTRODUCTION

Acute Respiratory Infection (ARI) is the leading cause of morbidity and mortality in children (IDAI, 2010). ARI that is not handled properly can cause pneumonia or even death. Cough and cold diseases such as rhinitis, pharyngitis, tonsillitis and other upper respiratory infections are classified as non-pneumonia (Kemenkes, 2012). Prevention recurrent non-pneumonia ARI will reduce the illness of children through ARI and reduce the risk of severe toddler conditions.

The incidence of non-pneumonia ARI in September 2016 from 34 Puskesmas in Jombang amount of 3,277 children under five-year-old. Puskesmas Mojoagung had the third largest incidence of non-pneumonia ARI. From January 2016 to August 2016 found the incidence of NP-ARI were 3,834 on toddlers and five cases of pneumonia. The largest number (540 toddlers) of NP-ARI was found in Tanggalrejo village. The preliminary study obtained that mother beliefs about the importance of prevention recurrent non-pneumonia ARI were still not convincing. Most of them remained to assume that the recurrent of Ari was normal and usual. However, Kemenkes explained some efforts to prevent the recurrence of NP-ARI include immunization of measles and pertussis, child nutrition improvement including the promotion of breastfeeding, improving health for pregnant women to prevent low birth weight (LBW), reducing in-house or out-door populations, reducing population density, improving home ventilation, and improving health hygiene. Mother already know about the prevention, but not all of them can implement them. If a person believes a new behaviour is useful (perceived benefits), but does not think he or she is capable of doing it (perceived barriers), it is likely that the behaviour will not be adapted (Jones & Bartlet, 2010). Self-efficacy will determine how a person feels, thinks, and motivates herself to act or behave (Bandura, 2013).

Self-efficacy is a person's belief about his ability in doing an activity that has a specific purpose that will affect his life (Bandura, 1997). In the other hand, self-efficacy is influenced by several factors consisting of performance accomplishment, vicarious experience, verbal persuasion, emotional arousal. The main construct of perceived and self-efficacy is part of Health Belief Model (HBM) (Rosenstock, 1974).

HBM is a concept that reveals the reasons for the person to want or will not engage in healthy behaviour (Becker, 1984). The Health Belief Model (HBM) theory was used as the theoretical framework of this study by focusing on the mother self-efficacy for preventing recurrent non-pneumonia ARI. In addition to HBM studies, the Precede-Proceed model is used in complementing the development of HBM application models that would be built on mothers to prevent the recurrence of non-pneumonia ARI. The Precede-Proceed Model examines the issues of human behaviour and the factors that influence it, and how to follow up by trying to change, maintain or enhance the behaviour toward a more positive (Green, 1991). The study aimed to develop the model on mother self-efficacy preventing recurrence non-pneumonia ARI among toddlers based on the integration of Health Belief Model and Precede-Proceed Model. Further, this study can be used to improve the self-efficacy of the mother in the prevention of recurrent non-pneumonia ARI so that no toddler has pneumonia or even death.

MATERIALS AND METHODS

This study used cross-sectional approach and conducted in Tanggalrejo village in Mojoagung Jombang in March 2017. The population were 325 mothers with a toddler who registered in Posyandu, and 100 mothers with a toddler were recruited as samples by cluster sampling. The inclusion criteria in this study included: 1) mothers with toddlers (1-3 years); 2) Mothers who lived in the same house with children; 3) Mothers who have children with non-pneumonia ARI; 4) Mothers with toddlers registered at posyandu. While the exclusion criteria were mothers, who had toddlers with complicated diseases especially respiratory disease (example asthma).

The variables involve in this study were predisposing factors (mother's age, mother's education, family income, mother's knowledge, and mother's attitude), enabling factors (the use of health services and access to health resources), drivers or reinforcing factors sand family support), main perceived constructions (perceived susceptibility, perceived severity, perceived benefits, perceived barriers). Data were collected through questionnaires. The questions asked in the questionnaire of this study have been tested for validity and reliability. The validity of each item was tested using the Pearson Correlation using the level of significance of 0.05. The reliability of the items was tested using Cronbach Alpha.

FGD was conducted on mothers who selected from the pool of survey. The FGD did twice, with eight toddler mother then six experts (one doctor, one programmer of ARI, one academician, three midwives). Data obtained were analyzed using SmartPLS 3. The Human Research Ethic Committee granted the ethic of this study from the Faculty of Nursing Universitas Airlangga under the letter number 346-KEPK dated February 17th, 2017.

RESULTS

In this study, the outer model was evaluated by testing the validity and reliability on the model and outer model evaluation by looking at the T statistic score. A validity test of the model can be seen from outer loading value in Table 1. It showed that three indicators were invalid (age=0.30, education=0.47, income=0.13) and sixteen indicators were valid with outer loading value>0.5. Three invalid indicators were excluded from the model. Outer loading value of predisposing factors consisting of two indicators: knowledge (0.61) and attitude (0.78); Enabling factors consisting of two indicators: the use of health services (0.89) and the accessibility of health resources (0.81); Reinforcing factors consisting of two indicators, namely the role of health officer (0.95) and family support (0.71); Main perceived construction consist of four indicators: perceived susceptibility (0.71), perceived severity (0.69), perceived benefits (0.79), perceived barriers (-0.53); Perceived threat (1.00); Self efficacy which had four indicators of performance accomplishment (0.88), vicarious experience (0.84), verbal persuasion (0.71), emotional arousal (0.51) and prevention of recurrent non-pneumonia ARI (1.00).

Table 2 showed the reliability test of the model. Reliability test can be seen from Cronbach alpha and composite reliability value. A construct or variable was said to satisfy the reliability test if it has a value of composite reliability >0.7 and the value of Cronbach alpha >0.6. Cronbach alpha value of

Table 1. Validity test results development of model on mothers self-efficacy in preventing recurrence of non-pneumonia acute respiratory infection among toddler in Tanggalrejo Village

No.	Variable	Indicator	Outer loading	Description
1.	Predisposing factors	X1.1 Age	0.302	Invalid
		X1.2 Education	0.476	Invalid
		X1.3 Income	0.139	Invalid
		X1.4 Knowledge	0.615	Valid
		X1.5 Attitude	0.787	Valid
2.	Enabling factors	X2.1 Using of health services	0.896	Valid
		X2.2 Accessibility to health resource	0.811	Valid
3.	Reinforcing factors	X3.1 Role of health officer	0.959	Valid
		X3.2 Family support	0.711	Valid
4.	Main construct of perceived	X4.1 Perceived susceptibility	0.714	Valid
		X4.2 Perceived severity	0.697	Valid
		X4.3 Perceived benefits	0.798	Valid
		X4.4 Perceived barrier	-0.531	Valid
5.	Perceived threat		1.000	Valid
6.	Self-efficacy	X6.1 Performance accomplishment	0.886 0.840	Valid
		X6.2 Vicarious Experience	0.718	Valid
		X6.3 Verbal Persuasion	0.515	Valid
		X6.4 Emotional arousal		Valid
7.	Prevention of recurrent non- pneumonia ARI		1.000	Valid

Tabel 2 Reliability test results development of model on mothers self-efficacy in preventing recurrence of non-pneumonia acute respiratory infection among toddler in Tanggalrejo Village

No.	Variable	*Cronbach Alpha*	*Composite Reliability*	Description
1.	Predisposing factors	0.326	0.595	Invalid
2.	Enabling factors	0.600	0.832	Valid
3.	Reinforcing factors	0.652	0.829	Valid
4.	Main construct of perceived	0.210	0.575	Invalid
5.	Perceived threat	1.000	1.000	Valid
6.	Self-efficacy	0.743	0.835	Valid
7.	Prevention of recurrent non-pneumonia ARI	1.000	1.000	Valid

enabling factors (0.60), reinforcing factors (0.65), perceived threat (1.00), self-efficacy (0.74), and prevention of recurrent non-pneumonia ARI (1.00) were satisfied reliability test. Cronbach alpha value of predisposing factors (0.32) and main constructs of perceived (0.21) was not satisfied reliability test. The values of the composite reliability of enabling factors (0.83), reinforcing factors (0.65), perceived threat (1.00), self-efficacy (0.83), and prevention of recurrent non-pneumonia ARI (1.00) were satisfied reliability test. The values of the composite reliability of predisposing factors (0.59) and main constructs of perceived (0.57) were not satisfied reliability test. Based on the expert's recommendation, all the constructs or variables were tested in the model because all of the variables support the prevention of recurrent non-pneumonia ARI.

Table 3 showed the hypothesis test. There was a significant influence if the variables had value T>1. From Table 3, it can be seen that (1) There was a significant

Tabel 3. Hypothesis test results development of model on mothers self-efficacy in preventing recurrence of non-pneumonia acute respiratory infection among toddler in Tanggalrejo Village

No.	Variabel	Path Coefisien	Standard Deviation	T Statistics	Explanation
1.	Predisposing factor toward main perceived construction	0.276	0.098	2.808	Significant
2.	Enabling factors toward main perceived construction	0.260	0.094	2.776	Significant
3.	Reinforcing factors toward main perceived construction	0.231	0.102	2.255	Significant
4.	Main perceived construction toward self-efficacy	0.597	0.073	8.205	Significant
5.	Main perceived construction toward perceived threat	0.670	0.061	11.073	Significant
6.	Perceived threat toward prevention	0.218	0.081	2.698	Significant
7.	Self efficacy toward prevention	0.350	0.087	4.009	Significant

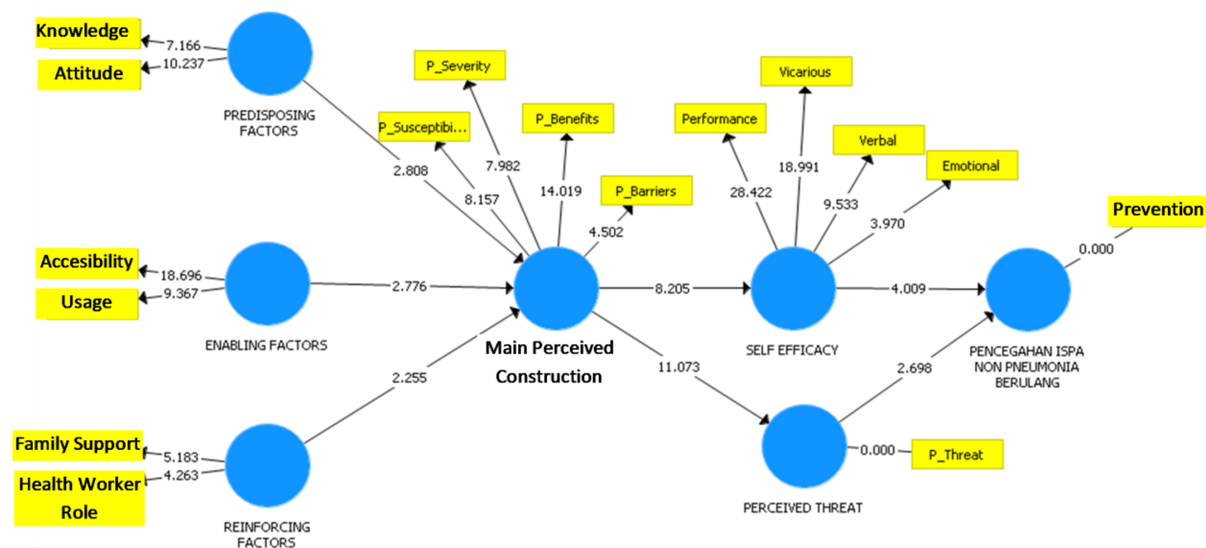

Figure 1. Analysis test results development of model on mothers self-efficacy in preventing recurrence of non-pneumonia acute respiratory infection among toddler in Tanggalrejo Village

influence between predisposing factors toward main perceived construction (T=2.80). (2) There was a significant influence between enabling factors toward main perceived construction (T=2.77). (3) There was a significant influence between reinforcing factors toward main perceived construction (T=2.25). (4) There was a significant influence between main perceived construction toward self-efficacy (T=8.20). (5) There was a significant influence between main perceived construction toward perceived threat

(T=11.07). (6) There was a significant influence between perceived threat toward prevention of recurrent in pneumonia ARI (T=2.69). (7) There was a significant influence on self-efficacy toward prevention of recurrent in pneumonia ARI (T=4.00). Analysis test results development of model can be seen in figure 1.

Recommendation results of FGD with mothers with toddler and experts: 1) Increase awareness of health workers to provide education and evaluate programs about ARI and prevention of recurrent NP-ARI. 2) Mothers with toddler should be educated routinely about ARI and prevention of recurrent NP-ARI by an easy-to-understand method, include the risk of recurrent non-pneumonia ARI in toddlers, clean and healthy behavior and proper hand washing, immunization, providing vitamin A and good nutrition, exclusive breastfeeding, stress management, signs-symptoms and the emergency of ARI and the use of mask. 3) Mothers with toddler and families need to know how to modify the environment to prevent recurrent NP-ARI in toddlers. 4) Improve the function of village's clinic that supported by health workers and good facilities. 5) Make the peer group among mothers with a toddler for support each other.

All the result of this study were integrated into the module as a guide to increase mother self-efficacy in preventing recurrence of non-pneumonia ARI.

DISCUSSION

Predisposing Factors in Forming the Main Perceived Construction

The PLS analysis showed that there was a significant influence between predisposing factors toward main perceived construction. The PLS analysis results on the indicator of predisposing factors obtained that the value of outer loading met the level of knowledge and attitude. In line with that, the results of Guvenc, Seven and Akyuz (2016) shows that high knowledge will increase perceived susceptibility, perceived severity and perceived benefits, and decrease perceived barriers.

Based on the questionnaires, almost all respondents had good knowledge. The finding from FGD showed that mothers with a toddler knew non-pneumonia ARI based on their experience, either their own experience or others experience. This result was in line with notoatmojo's opinion that experience was one-factor influence knowledge (Notoatmojo, 2012). However, for non-pneumonia ARI terminology has not understood but they understood about a cough, runny nose and breathlessness or respiratory disorders. Mothers with a toddler who knows good prevention of recurrent non-pneumonic ARI can improve the perception in preventing recurrent of non- pneumonia ARI.

This study showed that most respondents had a positive attitude. Based on FGD, the habit was the most difficult cause to change attitude. Habits related to the prevention of recurrent non-pneumonia ARI, such as smoking by family members, the used of masks on family members who were experiencing ARI, and awareness to maintain personal hygiene were difficult to change. Positive attitude toward the prevention of recurrent non-pneumonia ARI will increase the main perceived construction in preventing of recurrent non-pneumonia ARI. This result was in line with Robbin opinion; perceptions are influenced by attitudes, motives, interests, experiences, and expectations (Robbins, 2006).

Enabling Factors in Forming the Main Perceived Construction

Enabling factors manifest in the physical environment and the availability of health facilities. Enabling factors include the using of health services, accessibility to health resources, government regulations, and health skills (Green, 1991). This study only uses health services and accessibility of health resources as indicators of supporting factors. The PLS analysis result showed that there was a significant influence between the variable of enabling factors toward main perceived construction.

The using of health services greatly affects the severity of ARI. In some developing countries, the utilization of health facilities is still low. The using of health facilities could reflect the high incidence of ARI, that was 60% of outpatient visits in Puskesmas and 20-40% of outpatient visited in hospitals (IDAI, 2010). The results show that there is a relationship between the use of health services with the public's health

perception (Napirah *et al.*, 2016). Similar to this study, Wahyuni (2012) shows that there was a significant relationship between the utilisation of health services with the illness perception. It can be seen from the survey that the availability of health services, affordable costs and excellent health services were important factors to prevent the recurrence of a pneumonia ARI. FGD showed that mothers with a toddler took their toddlers to health services such as Puskesmas or to private health services when they had ARI.

The choice of using health service facility was due to the suitability or cost reason. Mothers who choose to took their toddlers to private health services because they felt that there was no change in their condition after took at the Puskesmas. However, there were mothers who still took their toddlers to the puskesmas for free services. Good health services will increase the main perceived construction in preventing of recurrent non-pneumonia ARI.

Accessibility is an indicator of the place to be easily reached from other locations through the transport system. Indicators of affordability include the time, cost, and way in moving from place to another place. Some factors that affect accessibility include distance, transportation network, road availability, transportation facilities, and road quality (Muta'ali, 2015). There was a relationship between travel time and the use of health facilities (Nainggalon, 2012). Retnaningsih et al. (2007) show that variables related to respondent's access to health service are knowledge, health insurance, advice, cost, and distance to health service (Retnaningsih, 2007).

Health-source accessibility was found to be well accessibility. It can be seen from the distance, cost and transportation facilities to reach health services. FGD showed that village clinic could be used for treatment including toddlers who had non-pneumonia ARI. Good health source's accessibility will increase the main perceived construction in preventing recurrent non-pneumonia ARDs.

Reinforcing Factors in Forming the Main Perceived Construction

Reinforcing factors manifest in attitudes and behaviours of health workers, peers, parents, and community reference groups. Reinforcing factor consist of family, peers, teachers, co-workers, health workers, traditional leaders, and decision makers. PLS analysis showed that there was a significant influence between reinforcing factors toward main perceived construction. This study only uses the role of health worker and family support as variables.

Result study showed that the role of health care workers is related to the mother's perception and may affect mother's behaviour. In line with this study, Asri (2013) reported a relationship between the role of healthcare workers and behavioural changes. There was a relationship between perception of the mother about the role of health workers in preventing pneumonia (Wahyuningsih, 2013).

Health worker played a significant role in educating mothers. It can be seen from the frequency and implementation of education. Experts in FGD revealed that the ARI counselling was given once in three months. FGD also indicated existing programs and implementation of education program in the community should be alignment. Thus, it was expected that mothers with a toddler could get the proper information about the prevention of recurrent in pneumonia ARI. Good role of health worker will improve the main perceived construction in preventing recurrent non-pneumonia ARI.

Family support in this study focused on emotional, appreciation, information and instrumental support. Study of Bahar (2013) shows that family support related to exclusive breastfeeding behaviour. In line with this study, family support affects a person's behaviour. In this study, the family was an important factor in preventing recurrent non-pneumonia ARI in toddlers. Families should realize the importance of prevention of recurrent non-pneumonia, so they expected to improve their effort in preventing recurrent non pneumonia ARI. Good family support will improve the main perceived construction (primary perceptual construction) in preventing recurrent non-pneumonia ARI.

Main Perceived Construction in Forming the Perceived Threat

The PLS analysis result showed that there was a significant influence on main perceived construction toward the perceived threat. The results of perceived threat indicated that the respondents had a high score. It was seen from the perception of threat through

several aspects, which are: vitamin deficiency, incomplete immunisation, history of exclusive breastfeeding, non-supportive environment, the impact of recurrent non-pneumonia ARI.

Mother with toddler FGD results were found that some mothers who did not give exclusive breastfeeding. Following up on this, FGD experts discussed the importance of exclusive breastfeeding socialisation on how to exclusive breastfeeding and tools hygiene when using ASIP (breast milk).

Perceived Threat in Forming the Prevention of Recurrent Non-Pneumonia ARI

In this study, health promotion that could be given starting from the concept of ARI, ARI care, environmental modification, PHBS or Clean and Healthy Behavior Program, hand washing, balanced nutrition, breastfeeding. Special protection was done by immunization. Disability restrictions by alerting alertness to ARDs. Rehabilitation was done to maintain the quality toddlers life. Prevention is the effort to direct some activities to protect clients from potential health threats. According to Leavell and Clark there are five levels of prevention, including health promotion, specific protection, early diagnosis and prompt treatment, and also disability limitation.

PLS analysis results showed that there was a significant influence between perceived threat variables on the prevention of recurrent no-pneumonia ARI. The study shows that perceived threat have a positive relationship to behavioural change (Sundstrom *et al.*, 2015). Efforts to ARI prevention include immunisation against measles and pertussis, improving child nutrition including promotion of breastfeeding, improving health for pregnant women to prevent low birth weight (LBW), reducing in-house or out-of-home populations, reducing the population.

The prevention of non-pneumonia ARI recurrent showed that the behaviour of providing nutritious food, environmental modification, immunisation completion, exclusive breastfeeding, vitamin A administration. Based on FGDs results with experts, it was necessary to socialise the prevention and treatment of non-pneumonia ARI easily or traditionally and to review the need for medical treatment such as a nebulizer.

Self-Efficacy in Forming the Prevention of Recurrent Non-Pneumonia ARI

PLS analysis results showed that there was a significant influence between self-efficacy toward the prevention of recurrent non-pneumonia ARI. In line with the results, the study about self-efficacy showed that self-efficacy as a predictor of behaviour (Buglar, White and Robinson, 2010). In the Sundstorm (2015) study, the behaviour change influenced by perceptions of susceptibility, severity, benefits, barriers, self-efficacy and cues to action. Based on FGD, most of their family members smoking at home. Mothers also acknowledged that it was challenging to change smoking of family member inside the house.

The vicarious experience showed that largely an experience gained from others. Based on the FGD, the experience of others could trigger the mother to keep the toddler's health including doing the prevention of recurrent non-pneumonia ARI. Based on the results of FGD found that it was hard to prevent children from play outside the house. The emotional arousal had good value for each item of the statement. Based on the results of FGD found that most toddlers felt anxious when toddlers had ARI.

Prevention of disease is the effort to direct some activities to protect clients from potential health threats. Efforts to prevent ARI include immunization against measles and pertussis, improving child nutrition such as breastfeeding promotion, improving health for pregnant women to prevent low birth weight (LBW), reducing in-house or out-of-home populations, reducing population density, home ventilation addition, health hygiene improvement (Kemenkes, 2012).

Results showed that the prevention of recurrent non-pneumonia ARI of some mothers with toddlers was good. Based on FGD results showed that they were almost never used a mask when they had ARI. They were still lack of confidence in preventing the non-pneumonia ARD recurrence. They considered that non-pneumonia respiratory problem was a common and reasonable event. Mothers with toddlers were less aware that non-pneumonia ARI can cause complications if not treated properly. Also, respondents also do not understand that non-pneumonia ARI can be prevented. Good self-efficacy is

expected to improve the prevention of non-pneumonia ARI recurrence.

CONCLUSIONS

Mother self-efficacy improvement model toward prevention of recurrent non-pneumonia ARI on toddlers can be formed by predisposing factors, enabling factors, main perceived construction, perceived threat, self-efficacy and prevention of recurrent non-pneumonia ARI. The greatest result was in the influence of main perceived construction to perceived threat (T=11.07). Increasing self-efficacy of mothers with toddler can be done by educating about ARI concept, conventional ARI treatment, environmental modification, benefits of using mask, clean and healthy life behavior, proper hand washing, nutrition feeding, exclusive breastfeeding, stress management; create peer group support for toddlers mother; and optimizing the role of health officers and family support.

Mothers with a toddler and their family need a simple health education about ARI and prevention of recurrent NP-ARI. Mothers with toddler need to make peer group to share information and experience in preventing recurrent NP-ARI. The results of the study can be used to review the policy of existing ARI control programs. Further research is expected to examine the relationship of other variables in precede proceeded model or on the health belief model in preventing of recurrent non-pneumonia ARI on toddlers.

REFERENCES

Asri, N. (2013) *Hubungan Peran Petugas Kesehatan dan Media Informasi dengan Perilaku Seksual Pada Ibu Pasca Nifas di Wilayah Kerja Puskesmas Peukan Bada Kabupaten Aceh Besar*. Sekolah Tinggi Ilmu Kesehatan U'budiyah BAnda Aceh.

Bahar, B. (2013) *Hubungan Antara Karakteristik Ibu, Peran Pettugas Kesehatan, dan Dukungan Keluarga dengan pemberian ASI Eksklusif di Wilayah Kerja Puskesmaas BOnto Cani Kabupaten Bone*. Fakultas Kesehatan Masyarakat Universitas Hasanuddin Makasar.

Bandura (1997) *Self Efficacy: The Exercise of Control*. New York: W.H. Freeman and Company.

Bandura, A. (2013) 'Self Efficacy', *Kognitiog paedagogik*, (83), pp. 16–35.

Becker, J. & (1984) 'The Health Belief Model: A decade Later', *Health Education Quarterly*, 1(11), pp. 1–47.

Buglar, M. E., White, K. M. and Robinson, N. G. (2010) 'Patient Education and Counseling The role of self-efficacy in dental patients ' brushing and flossing : Testing an extended Health Belief Model', 78, pp. 269–272. doi: 10.1016/j.pec.2009.06.014.

Green (1991) *Health Promotion Planning. An Educational and Environment Approach*. 2nd edn. ED. Mountain View: Mayfield Publishing Co.

Guvenc, G., Seven, M. and Akyuz, A. (2016) 'Health Belief Model Scale for Human Papilloma Virus and its Vaccination: Adaptation and Psychometric Testing', *Journal of Pediatric and Adolescent Gynecology*. Elsevier Inc, 29(3), pp. 252–258. doi: 10.1016/j.jpag.2015.09.007.

IDAI (2010) *Buku Ajar Respirologi Anak*. Pertama. Jakarta: Badan Penerbit IDAI.

Jones & Bartlet (2010) 'Helath Belief Model', in *Design and implementation of AN OSTEOPOROSIS prevention program using the health belief program*, pp. 31–44.

Kemenkes (2012) *Pedoman Pengendalian Infeksi Saluran Pernafasan Akut*. Jakarta: Kementrian Kesehatan Republik Indonesia.

Muta'ali, L. (2015) *Teknik Analisis Regional Untuk Perencanaan Wilayah, Tata Ruang dan Lingkungan, Yogyakarta: Badan Penerbit Fakultas Geografi*. Yogyakarta: Badan Penerbit Fakultas Geografi.

Nainggalon (2012) 'Hubungan Perilaku Ibu dengan Peran Petugas Kesehatan di Wilayah Kerja Puskesmass NAmorambe Kecamatan Deli Tua', *Universitas Sumatera Utara*, 17.

Napirah, M. R. *et al.* (2016) 'FAKTOR-FAKTOR YANG BERHUBUNGAN UTARA KABUPATEN POSO', 7062. doi: 10.14710/jpk.4.1.29-39.

Notoatmojo, S. (2012) *Promosi Kesehatan dan Perilaku Kesehatan*. Jakarta: Rineka Cipta.

Retnaningsih (2007) ‘Analisis Multilevel Model Akses Layanan Kesehatan Suspek Pederita Tuberkulosis di Indonesia’, *Buletin Panel Kesehatan*, 4(35), pp. 156–166.

Robbins (2006) *Perilaku Organisasi*. Edisi Baha. Pearson education.

Rosenstock (1974) ‘Historical Origin of The Health Belief Model’, *Health Behaviour & Education*, pp. 328–335. doi: 10.1177/109019817400200405.

Sundstrom, B. *et al.* (2015) ‘Protecting the Next Generation : Elaborating the Health Belief Model to Increase HPV Vaccination Among College-Age Women’, 21(3), pp. 173–188. doi: 10.1177/1524500415598984.

Wahyuningsih (2013) *HUbungan persepsi Ibu Tentang peran Serta tenaga Kesehatan dengan Perilaku Pencegahan pneumonia pada Ibu Balita Usia 1-5 Tahun di Puskesmas Ngesrep KOta Semarang*. Universitas Muhammadiyah Semarang.

FAMILY PROCESS WITH BREAST CANCER PATIENT IN INDONESIA

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ABSTRACT

Introduction: Breast cancer occupies the first position in Asia's women cancer cases in recent years. Signs and symptoms experienced by the patient affect the stress condition of the patient as well as the family as a caregiver. The condition changes to deal with problems during patient assistance as a major problem in an outpatient setting. The demands of adaptation to through the needs during the period of assistance by the family is more complex. The study aimed to determine the experience of stress and adaptation of breast cancer patient's family. **Methods:** The qualitative method used with in-depth interviews on seven respondents who were the family caregiver of breast cancer patients. Setting carried out at the shelter house in Bandung. The analysis process used thematic analysis based on Braun & Clarke. **Results:** The results found five main themes are: 1) Stressor on breast cancer patients, 2) Crisis fulfillment of companion needs, 3) Crisis accompaniment, 4) Coping mechanisms of caregiver, and 5) Ability in adaptation. **Conclusions:** Family experience in assisting breast cancer patients who undergo outpatient also impact families tension who traversed with a subjective effort optimally to adapt in accompanying patients and the needs of other resource support system. Suggestions for future step are early recognition of stress by health workers especially nurses to be able to provide targeted interventions to develop positive adaptation to clients. The development through research is needed in applying family center care both the outpatient and inpatient care in an integrated manner.

Keywords: adaptation, breast cancer, caregiver, stress

INTRODUCTION

The Indonesian profile in the WHO (2014) shows the statistics of cancer incidence reaching 103,100 new cases compared to new cases in the world of 14.1 million cases. Specific cases of breast cancer in West Java show an incidence of 1.0 ‰ of the population (Riskesdas) (2014). Anderson and Jakesz (2008) state that developing countries need practical, cost-effective resource interventions in the treatment of breast cancer. Hopkinson (2016) proven eating disorders often occur in cancer patients and affect the family diet until cachexia syndrome. While the family as an informal caregiver who became the primary caregiver tended to experience depression, physical & mental fatigue (Buyck et al. (2011); Papastavrou, Charalambous, and Tsangari (2012). Limited resources in socioeconomic problems made consequence of improper treatment (Obrist et al., 2014). Especially for patients with outpatient treatment. The role of the family to be the companion not only affects the patient but also the condition of the resources around the family.

Resources for handling breast cancer include healthcare facilities, skilled health workers, and support resources including family and social. Resources that can be exploited and influential one of which is the family (Beaver, Williamson, & Briggs, 2016). Family assistance can be a support to optimize the condition of breast cancer patients. Controlling signs & symptoms such as fatigue, anemia, hot flashes, hair loss, impaired mobility, decreased appetite and activity intolerance (Jones, Eves, Haykowsky, Freedland, & Mackey, 2009); Tachi et al. (2015); Tsitsis and Lavdaniti (2014) and family confusion accompanying breast cancer patients. The stressors in the treatment process will affect family status (Govina et al., 2014). Changes in family psychological conditions according to Khanjari, Langius-Ekl€of, Oskouie, and Sundberg (2014) appear at least after six months of patients diagnosed with breast cancer. Some treatment options for breast cancer include surgery, chemotherapy, radiotherapy and a combination of these therapies that have therapeutic effects as well as side effects in patients starting during preparation, during implementation and after treatment (Kumar & Bhasker, 2015). Conditional conditions should be explored to prepare the process of treatment, especially in the outpatient care.

The healthcare process as one of the functions of the family in addition to reproductive, socializing, economic and affective functions (Kaakinen, Gedaly-Duff, Coehlo, & Hanson, 2010) began to be developed with a team of health professionals. This is aligned with the development of family center care methods in several health facilities that want to involve families actively to

improve the quality of services and satisfaction of clients and health workers in the treatment and care process. Family increasing caring ability showed decreasing burden and indicated a calming bereavement (K.-C. Lee, Yiin, & Chao, 2016). It becomes important to know the condition and potential sources of family.

Based on the text above, the research aimed to determine the experience of stress and adaptation process of family who had breast cancer patients in the area of Bandung City. This study aims to know and understands the experience of stress and adaptation of family of breast cancer patients in Bandung**.**

MATERIALS AND METHODS

The research used the qualitative method and purposive sampling with an interview with the informal caregiver of breast cancer patients who undergo treatment and outpatient setting in Bandung. Interview guide developed by the first researcher with content validity by the second and third researcher using the middle range theory 'The Family Stress and adaptation' (Geri LoBiondo-Wood, 2008). Participants targeted using purposive sampling with inclusion criteria such as: family members of breast cancer patients who have been assisting and actively involved in care (primary caregiver) at least 6 months (Khanjari et al., 2014) to the patient since being diagnosed by the doctor, has signed informed consent at the beginning of the research, the participants are located in Bandung City. For the exclusion criteria depends on children or adolescents (<16 years old), participants with communication disorders and participants with mental disorders. The recruitment settled by the first researcher by visited the manager of shelter house and sorted out the participant that fit the criteria. The anonymity used initials coding to each participant. Ethical approval number 519/UN6.C10/PN/2017 by Research Ethics Commission Medical Faculty of Padjadjaran University.

The study was conducted from April to June 2017 when the saturation data was obtained through intense meetings with participants. In hence conducted the rigor and trustworthiness interview used an optimal interview from the 3-5 session, triangulation data & investigator, and peer debriefing. The time spent on interviews averaged 51 minutes. The research setting was in a shelter house called Rumah Teduh Inn located in Bandung City, West Java. Participants lived as long got some cancer medication and/or treatment where lived periodically in 4 separate houses. Specifically for this study focused on the 1st and 2nd houses. This is because the existence of patients appropriate for inclusion criteria focused on that location. This research used in-depth interview technique with tape recorder and field note assistance prepared during the interview process. Analysis of this study using thematic analysis (Braun & Clarke, 2006).

RESULTS

This study obtained seven (7) participants who were related to their position as a caregiver/companion for breast cancer patients who underwent treatment in Bandung City. Participants consisted of six patient as husbands and one child of the patient and all of whom were men. The educational level of participants is in the range of elementary school- senior high school level. Participants have been accompanied the patient through the illness begun - now at least 6 months and a maximum of 4 years.

Table 1. Participant demographic information

Age	Kinship	Employment status	Lengthy as caregiver
53 years	Husband	No job	1 year
35 years	Husband	No job	2 years
71 years	Husband	No job	4 years
23 years	Son	No job	7 months
54 years	Husband	No job	3 years
44 years	Husband	No job	2 years
30 years	Husband	No job	1 year

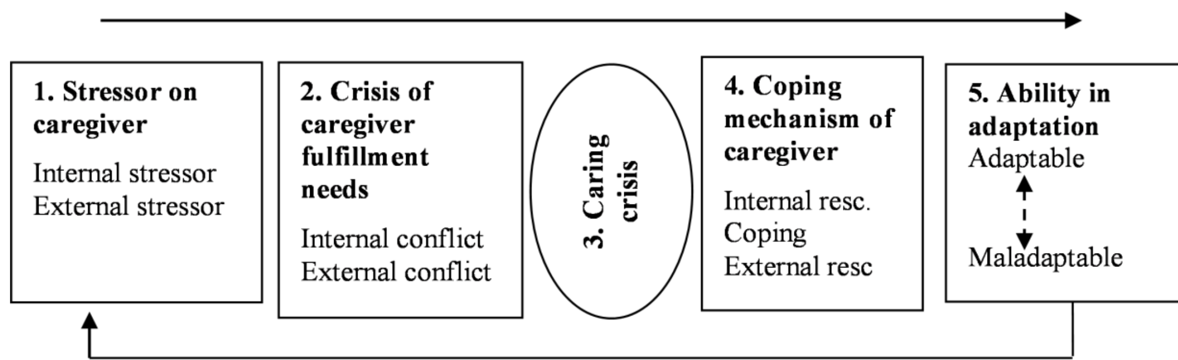

Figure 1. The themes scheme of stress and adaptation process in breast cancer caregiver

We found out five main themes: 1) Stressor on the caregiver, 2) Crisis of caregiver fulfillment needs, 3) Caring crisis, 4) Coping mechanism of caregiver, and 5) Ability in adaptation as depicted in Figure 1. The first theme, *Stressor on caregiver*: the demands of family problems are elaborated through sub-themes, according to delays in recognizing and managing disease; and family economic difficulties, as an internal stressor. Meanwhile, external stressors, according to assessing the limitations of patient activity, the complexity of health insurance, long treatment process, and suspicion on the surrounding community. The second theme, *Crisis of caregiver fulfillment needs* (reaction to internal and external impacts) is elaborated with sub-themes, such as internal conflicts (changes in the family, difficulty working, physical and mental fatigue, separated grief with the nearest member of the family, conflicts of treatment decision-making). The sub-theme builds the internal tension that occurs in the family companion. Meanwhile, external conflict consists of limited assistance and support to the family, the shock of the patient's condition worsened.

Third, the conflict that occurred causing tension that manifested into the core theme of this research, namely *Caring crisis*. The caring crisis is described as a family stress condition in the face of unresolved problems after utilizing optimal existing resources and requiring additional resources. The crisis manifests in the form of limited economic resources (prolonged), the progressive condition of declining patients, death threats, and social environmental conditions.

Fourth, in the coping mechanism of caregiver is divided into three main components were (1) internal resources, (2) caregiver coping, and (3) external resources. Internal resources are understood as all assets, kinship, core family support that has been optimized by the companion. While external resources consist of alternative medicine, third party, social support in patient-family, assistance from shelter home. The coping consists of trying to obey the treatment for the conviction of healed, resignation to family conditions, entrusted to professional health workers, build coping with prayer and gratitude.

In the theme adaptability capability, there are four sub-themes: additional nutrition, adaptation, pain relief, health system adjustment. Nutrition information need of patient was focusing by the caregiver for preparation in next phase of treatment (radiation and/or chemotherapy). Caregiver used pain relief as simple intervention such as massage and hot compress applied in shelter house after the treatment in hospital.

DISCUSSION

Caregiver burden in cancer patient was complex and progressive, influenced by resource conditions inside and outside the family. Factors that affected the burden condition was the available resources such as daily activities competences, education level, gender, and financial status by the caregiver (Vahidi et al., 2016). This study found that level of education of participants was a range of elementary- senior high school level and equal, the condition of economic limitations and changes in daily activities experienced by all participants whose all male. Other research by Alptekin, Gonullu, Yucel, and Yarıs (2010) stated that informal female companions are more susceptible to decreased quality of life due to being a companion of cancer patients than male counterparts. In this research, the opposite occurred when the caregiver was all

man who was six are husband, and one is the son of the patient. In case they also feel the stress but not expressed verbally that much as they kept the pride as the head of the family. However, Jaafar et al. (2014) stated depression experienced by breast cancer patients related to ethnicity, duration of mentoring, patient functional status, and level education of caregiver. In this study participant open to all gender but because of caregiver and patient came from outside Bandung so that they prefer accompanied by the family were men or because there is no other family member as a caregiver. The other related results are described in detail in each sub-theme below.

In the sub-themes of internal stressors related to the delay in recognizing & managing of the disease and the economic difficulties of the families that are sources of internal stressor are perceived as internal stressors arising from limited capacity of companion resources.

> *"Yes… that time ..delay happened. So its delay about two months. Two months finished the regular medicine I didn't get here; I was so busy with (work)" (R1)*

The recognizing & managing also delayed significantly attributable to the patient's doubt whether his disease is benign or malignant (Taib, Yip, Ibrahim, CJ, & Farizah, 2007). Although there are also other factors such as residence distance were far away from health care facilities, marital status and the presence of children to be cared for. The financial problem tends to be the main burden of cancer patients (Vahidi et al., 2016), in line with Kaplan, Madden, Mijanovich, and Purcaro (2013) that explained of stressor in weak economic community group which one of them was overcome with helped by the co-administered funds between government and private parties (Moffat, Noble & White, 2012). The conditions become problem associated with early treatment for breast cancer patients within the family that can lead to the quality of life of patients and caregiver (family). The financial problem becomes a stressor from the beginning until the end of the breast cancer treatment and care.

> *"But from me, I couldn't get it (pay by out of pocket its self). Because I work as daily worker only" (R7)*

In the subtheme, the external stressor described as it 1) assessing the limitations of patient activity, 2) the complexity of health insurance, 3) lengthy treatment process, and 4) suspicion on the surrounding community. The patient's activity ability does indeed decrease during the disease process and treatment but still important to 'normalize' the patient to make sure they feel 'alive' and useful to others (Walshe et al., 2017). It certainly decreased the auxiliary load for ADL activity which is on the average increase in line with the improvement of conditions during the treatment process of the disease (Vahidi et al., 2016). Treatment time tends to be long since the diagnosis of disease has a positive correlation with the social burden and family life (Rha, Park, Song, Lee, & Lee, 2015). In the other hand health insurance for long way treatment needed. Chongsuvivatwong et al. (2011) state that health-related insurance implemented in Indonesia with decentralization system (Swadana) in implementation still needs stabilization because of the lack of supporting infrastructure. While a lack of understanding in national health insurance coverage may contribute to treatment inadequacy (Obrist et al., 2014). Accumulation of this stressor turns into caregiver burden of the family both internally and externally which then affects the family condition to respond to overcome it.

> *"Honestly we have (BPJS/national health insurance), but I didn't know how to use it, how the procedure….So I didn't know it before, so when it happens (illness comes) that time we knew as it is." (R4)*

The crisis of fulfillment of caregiver needs were elaborated through the sub-themes component of the internal conflict that is 1) the change in the family, 2) the difficulty of working, tired of the physical & mind, 3) the sadness of separation with the nearest person, and 4) the conflict of decision-making treatment. The hope for appreciated, listened and accompanied was not only happened to the patient but also on the caregiver (Kardiyudiani, 2012). Regan, Levesque, Lambert, and Kelly (2015) claimed the change in the role of the couple was an absolute matter in the condition of couples who have cancer and not infrequently the contradictions within the family or spouse in the process of disease and treatment. Role-shifting more on

practical help in everyday activities occurred as a result. Meanwhile, for a caregiver functional change requires a qualified ability to perform several tasks with special skills, such as treating injuries, treating patients congested, pain, memorizing drug delivery patients (Regan et al., 2015). Adjustment to the condition of the patient may affect both physical and psychological companions, including sleep disturbances (Zhang, Yao, Yang, & Zhou, 2014) as presented by Participant 1:

> *"Last night I couldn't sleep, so I did not sleep at all." (R1).*

They felt hard to continuing their life whether the spouse must be ill every time. The other conditions of difficulty in working were more complicated problem with increased financial needs in accompanying cancer patients ultimately decrease the ability of a caregiver in full-time work (Vahidi et al., 2016). A time-consuming maintenance burden becomes a major problem that occurs in many caregivers (Govina et al., 2014). Farewell during the treatment and treatment process contributes to the burden during side-by-side treatment (Govina et al., 2015) in addition to gender, family status, education, previous caring experience, occupational status, the difficulty of care, anxiety, and depression. So that caregivers end up adjusting job options or stopping working to care for sick family members.

> *"Yes, I quit the job..strait away calling for my boss. Boss, I couldn't send the packet (work as courier), my wife was got sick again." (R1)*

Sub-theme component in the external conflict in this research, such as 5) limited support & support to the family, 6) shock the patient's condition worsened. The deterioration of the patient's condition results in increased emotional distress on the caregiver (Burridge, Barnett, & Clavarino, 2009). Treatment decisions become the focus of counseling and sometimes between patients, spouses and families or relatives to differences in responding and choosing treatment options (Regan et al., 2015). Then there was the process of discussion (bargaining) in the selection of treatment. Limitations of assistance to families are linked to the growing needs of family conditions and long-term disease processes so that the needs and resources become unbalanced. The tension arises in the caregiver when creates a crisis that cannot resolve with the usual coping strategies and mechanisms (Barker, 2009); Townsend (2008). The development needed about uses resources and coping strategies additional broader than before.

Components of caregiver coping mechanism themes are elaborated with coping sub-themes covered by four topics, 1) endeavoring for a cure, 2) resignation of the family condition, 3) entrusting to professional health officers, and 4) building coping with prayer & gratitude. The family entrusted the professional health staff (Walshe et al., 2017) is a key form of emotional accompaniment, practice, and social support that positively impacts the patient and accompanies the treatment. The ambiguity of resignation is perceived as the dilemma faced by the caregiver for the limitation of their ability to care for the patient with the complexity of complaints and needs to lead to emotional distress (Regan et al. (2015); Papastavrou et al. (2012). The hope of recovered (as normal) after treatment at health service delivered family to support patient in treatment (Anggraeni & Ekowati, 2010). Sometimes This requires another self-help coping of the companion one of which holds on to the belief or belief that it has.

The sub-theme of external resources is four topics, 5) alternative medicine as treatment shortcut, 6) the third party in treatment, 7) impact of social support on patient-family, and 8) meaningful assistance from the shelter. Peer group communication is effective as one of social support apart from the community and family. This gives a different effect to the communication experience with the professional staff. Because they learn from those, who experience the same thing as they share strategies to get through the problem (Walshe et al., 2017). The use of other treatment options such as traditional and alternative is still the most favorite in breast cancer patients such as Kota Bharu, Malaysia (Taib et al., 2007) who are still both Malay with Indonesia. The reasons for its use are various, ranging from operating fears, friend influences, possible treatment success beliefs, and bad experiences in previous hospitals. A comparison of both countries showed that cancer patients in

Indonesia attacked the younger age group (<48 years) with a higher cancer stage in Indonesia than Malaysia (Ng et al., 2011).

> *"Alternative medicine advise came from our neighbor. They said alternative could do it (healing) without operation." (R7)*

Other resources that need to be developed for further access was the shelter service. Shelter service as the temporary place is managed by government and private sector through empowerment of government accredited foundation in Indonesia. The results of other health care facilities resemble as the study by Y. S. Lee et al. (2017) suggest that care at the hospice indicates a decrease in hospital admission rate, the comfort of living with a companion, active visits from doctors and nurses optimizing end of life care. So this contributes to late checks and treatment into a problem that can increase the burden of health in Indonesia and requires coping and management strategies of the participants and all parties involved.

Developing trust implemented by the form of praying and developing hope was done as a form of self-support in dealing with problems based on the value of spirituality that is believed (Anggraeni & Ekowati, 2010). Although other studies show avoidance behavior and rejection are still significantly occurring as coping with higher levels of depression of facilitation (Papastavrou et al., 2012). Mostly the caregiver in this research again built trust submit to fate and praying as once of coping mechanism.

Components of themes of adaptability found four topics, 1) additional nutrition efforts, 2) adapt to each other, 3) help with pain and 4) adjustment to the health system. Information on nutrition is one of the main information needed by patients other than disease management information (Kamiafar, Sarbaz, Sales, & Esmaeili, 2016). This information is not only the patient but also required by the companion. This is because the provision of nutrients will be further diverted to the task of caregiver especially in the condition of outpatients as in this study. Caregiver education programs are proven effective in improving the quality of life of patients with topics of food support, care services, welfare services (massage), and symptomatic management (Belgacem et al., 2013). Adjustment to the health system is a form of adaptation developed by a companion to succeed the patient's smooth treatment. In this process is not uncommon caregiver experience obstacles and confusion when told the procedure to be passed for patients get treatment (Anggraeni & Ekowati, 2010). This certainly hampers the process of health care assistance by the family.

Family health care in this study is based on Theory of Family Stress and Adaptation (G. LoBiondo-Wood, 2008) which is the middle-range theory group. Components of the theory are synergistic with the concept of the nursing paradigm that has four components: human, health, environment and nursing (Potter & Perry, 2010). The nursing approach is more focused on the individual (client) and the environment is not a disease according to the nursing concept assumption F. Nightingale (Parker & Smith, 2010) in harmony with Theory of Family Stress and Adaptation (LoBiondo-Wood, 2008). So the results of the study are expected to be in line with the philosophy of nursing.

Regan et al. (2015) addressed the themes of response to cancer, how to deal with cancer, experience with health workers, and transition to survivorship status. Compared to this study, we describe the components according to the setting of the shelter house in the process and the time span that marks the mentoring process in the care of cancer patients. Travel assistance of cancer patients through the mechanism of action - long-term reaction. Response to cancer, elaborated through a stress process divided into primary stressors (direct effects) and secondary (side effects), perceptions of the condition that is individual that builds self-efficacy. This has an impact on how to address the mentoring process in the course of the disease (Fletcher, Miaskowski, Given, & Schumacher, 2012). The emerging crisis results from the inability to cope with existing problems with family coping mechanisms normally used (Barker, 2009). To develop other coping mechanisms with additional resources that exist around to achieve balance and adaptation.

CONCLUSIONS

The conclusion of this research is the experience of stress and adaptation of the family of breast cancer patient in Bandung is a

continuous stage of the stressor to the formation of crisis that requires continued coping until the formation of adaptation by the breast cancer patient. This continuous process is evident in the themes gained through research on participant experience as a companion. Support from professional nurses may be needed to minimize the stress and pass on the adaptation process.

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REFERENCES

Riskesdas (2014). Profil Kesehatan Provinsi Jawa Barat Tahun 2014. Indonesia: Dinas Kesehatan Provinsi Jawa Barat.

Alptekin, S., Gonullu, G., Yucel, I., & Yarıs, F. (2010). Characteristics and quality of life analysis of caregivers of cancer patients. *Medical Oncology, 27*, 607-617. doi: DOI 10.1007/s12032-009-9256-2

Anderson, B., & Jakesz, R. (2008). Breast Cancer Issues in Developing Countries: An Overview of the Breast Health Global Initiative. *World Journal of Surgery, 32*, 2578-2585. doi: 10.1007/s00268-007-9454-z

Anggraeni, M., & Ekowati, W. (2010). Peran keluarga dalam memberikan dukungan terhadap pencapaian integritas diri pasien kanker payudara post radikal mastektomi. *The Soedirman Journal of Nursing, 5*(2), 105-114.

Barker, P. (2009). *Psychiatric and mental health nursing: The craft of caring* (2 ed.). London-UK: Hodder Arnold (Publishers) Ltd.

Beaver, K., Williamson, S., & Briggs, J. (2016). Exploring patient experiences of neo-adjuvant chemotherapy for breast cancer. *European Journal of Oncology Nursing, 20*(1), 77-86. doi: http://dx.doi.org/10.1016/j.ejon.2015.06.001

Belgacem, B., Auclair, C., Fedor, M.-C., Brugnon, D., Blanquet, M., Tournilhac, O., & Gerbaud, L. (2013). A caregiver educational program improves quality of life and burden for cancer patients and their caregivers: A randomised clinical trial. *European Journal of Oncology Nursing, 2013*, 1-7. doi: http://dx.doi.org/10.1016/j.ejon.2013.04.006

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77-101. doi: 10.1191/1478088706qp063oa

Burridge, L. H., Barnett, A. G., & Clavarino, A. M. (2009). The impact of perceived stage of cancer on caregivers' anxiety and depression during the patients' final year of life. *Psycho-Oncology, 18*, 615–623. doi: 10.1002/pon.1435

Buyck, J.-F. M. D. M., Bonnaud, S. M., Boumendil, A. P., Andrieu, S. M. D. P., Bonenfant, S. M., Goldberg, M. M. D. P., . . . Ankri, J. M. D. P. (2011). Informal Caregiving and Self-Reported Mental and Physical Health: Results From the Gazel Cohort Study. *American Journal of Public Health, 101*(10), 1971-1979.

Chongsuvivatwong, V., Phua, K. H., Yap, M. T., Pocock, N. S., Hashim, J. H., Chhem, R., . . . Lopez, A. D. (2011). Health and health-care systems in southeast Asia: diversity and transitions. *Lancet, 377*, 429-437. doi: DOI:10.1016/S0140-6736(10)61507-3

Fletcher, B. S., Miaskowski, C., Given, B., & Schumacher, K. (2012). The cancer family caregiving experience: An updated and expanded conceptual model. *European Journal of Oncology Nursing, 16*, 387-398. doi: 10.1016/j.ejon.2011.09.001

Govina, O., Kotronoulas, G., Mystakidou, K., Katsaragakis, S., Vlachou, E., & Patiraki, E. (2015). Effects of patient and personal demographic, clinical and psychosocial characteristics on the burden of family members caring for patients with advanced cancer in Greece. *European Journal of Oncology Nursing, 19*, 81-88. doi: http://dx.doi.org/10.1016/j.ejon.2014.06.009

Govina, O., Vlachou, E., Kavga-Paltoglou, A., Kalemikerakis, I., Papageorgiou, D., Fasoi, G., & Patiraki, E. (2014).

Exploring the factors influencing time and difficulty of tasks provided by family caregivers of patients with advanced cancer in Greece. *Health Science Journal, 8*(4), 438-451.

Hopkinson, J. B. (2016). Food connections: A qualitative exploratory study of weight- and eating-related distress in families affected by advanced cancer *European Journal of Oncology Nursing, 20*, 87-96. doi: http://dx.doi.org/10.1016/j.ejon.2015.06.002

Jaafar, N. R. N., Din, S. H. S., Saini, S. M., Ahmad, S. N. A., Midin, M., Sidi, H., . . . Baharudin, A. (2014). Clinical depression while caring for loved ones with breast cancer. *Comprehensive Psychiatry, 55*, S52-S59. doi: http://dx.doi.org/10.1016/j.comppsych.2013.03.003

Jones, L. W., Eves, N. D., Haykowsky, M., Freedland, S. J., & Mackey, J. R. (2009). Exercise intolerance in cancer and the role of exercise therapy to reverse dysfunction. *The Lancet Oncology, 10*, 598-605. doi: http://dx.doi.org/10.1016/S1470-2045(09)70031-2

Kaakinen, J. R., Gedaly-Duff, V., Coehlo, D. P., & Hanson, S. M. H. (2010). *Family health care nursing : theory, practice, and research* (4th ed.). United States of America: F. A. Davis Company.

Kaplan, S. A., Madden, V. P., Mijanovich, T., & Purcaro, E. (2013). The Perception of Stress and its Impact on Health in Poor Communities. *Journal of Community Health, 38*(1), 142-149. doi: http://dx.doi.org/10.1007/s10900-012-9593-5

Kardiyudiani, N. K. (2012). *Phenomenology Study; Hope of breast cancer patients who have chemotherapy about family support in cancer Dharmais Hospital Jakarta.* (Master), University of Indonesia, Jakarta-Indonesia.

Khanjari, S., Langius-Ekl€of, A., Oskouie, F., & Sundberg, K. (2014). Family caregivers of women with breast cancer in Iran report high psychological impact six months after diagnosis. *European Journal of Oncology Nursing*, 1-6. doi: http://dx.doi.org/10.1016/j.ejon.2014.06.002

Kumar, R. V., & Bhasker, S. (2015). Health-care related supportive-care factors may be responsible for poorer survival of cancer patients in developing countries. *Journal of Cancer Policy, 5*, 31-47. doi: http://dx.doi.org/10.1016/j.jcpo.2015.05.002

Lee, K.-C., Yiin, J.-J., & Chao, Y.-F. (2016). Effect of integrated caregiver support on caregiver burden for people taking care of people with cancer at the end of life:

A cohort and quasi-experimental clinical trial. *International Journal of Nursing Studies, 56*, 17-26. doi: http://dx.doi.org/10.1016/j.ijnurstu.2016.01.002

Lee, Y. S., Akhileswaran, R., Hock, M. O. E., Wah, W., Hui, D., Ng, S. H.-X., & Koh, G. (2017). Clinical and socio-demographic predictors of home hospice patients dying at home: A retrospective analysis of Hospice Care Association's database in Singapore. *Journal of Pain and Symptom Management, 2017*. doi: 10.1016/j.jpainsymman.2017.01.008

LoBiondo-Wood, G. (2008). Theory of Family Stress and Adaptation. In M. J. Smith & P. R. Liehr (Eds.), *Middle range theory of nursing* (2 ed., pp. 225-238). United State of America: Springer Publishing Company, LLC.

LoBiondo-Wood, G. (2008). Theory of Family Stress and Adaptation *Middle Range Theory fo Nursing* (2 ed.). New York, USA: Springer Publishing Company, LLC.

Moffatt, S., Noble, E., & White, M. (2012). Addressing the Financial Consequences of Cancer: Qualitative Evaluation of a Welfare Rights Advice Service. *PLoS One, 7*(8). doi: 10.1371/journal.pone.0042979 http://dx.doi.org/10.1371/journal.pone.0042979

Ng, C., Pathy, N. B., Taib, N., Teh, Y., Mun, K., Amiruddin, A., . . . Yip, C. (2011). Comparison of Breast Cancer in Indonesia and Malaysia – A Clinico-Pathological Study Between Dharmais Cancer Centre Jakarta and University

Malaya Medical Centre, Kuala Lumpur. *Asian Pacific Journal of Cancer Prevention, 12*, 2943-2946.

Obrist, M., Osei-Bonsu, E., Ahwah, B., Watanabe-Galloway, S., Merajver, S. D., Schmid, K., & Soliman, A. S. (2014). Factors Related to Incomplete Treatment of Breast Cancer in Kumasi, Ghana. *Breast, 23*(6), 821-828. doi: 10.1016/j.breast.2014.08.014

Papastavrou, E., Charalambous, A., & Tsangari, H. (2012). How do informal caregivers of patients with cancer cope: A descriptive study of the coping strategies employed. *European Journal of Oncology Nursing, 16*(1), 258e263. doi: doi:10.1016/j.ejon.2011.06.001

Parker, M., & Smith, M. C. (2010). *Nursing theories and nursing practice* (3 ed.). USA: F.A. Davis Company.

Potter, P. A., & Perry, A. G. (2010). *Fundamental Keperawatan* (7 ed.). Jakarta: Salemba Medika.

Regan, T., Levesque, J. V., Lambert, S. D., & Kelly, B. (2015). A Qualitative Investigation of Health Care Professionals', Patients' and Partners' Views on Psychosocial Issues and Related Interventions for Couples Coping with Cancer. *PLoS One, 10*(7). doi: 10.1371/journal.pone.0133837 http://dx.doi.org/10.1371/journal.pone.0133837

Rha, S. Y., Park, Y., Song, S. K., Lee, C. E., & Lee, J. (2015). Caregiving burden and the quality of life of family caregivers of cancer patients: the relationship and correlates. *European Journal of Oncology Nursing, 2015*, 1-7. doi: http://dx.doi.org/10.1016/j.ejon.2015.01.004

Tachi, T., Teramachi, H., Tanaka, K., Asano, S., Osawa, T., Kawashima, A., . . . Goto, C. (2015). The Impact of Outpatient Chemotherapy-Related Adverse Events on the Quality of Life of Breast Cancer Patients. *PLoS One, 10*(4). doi: 10.1371/journal.pone.0124169 http://dx.doi.org/10.1371/journal.pone.0124169

Taib, N. A., Yip, C. H., Ibrahim, M., CJ, N., & Farizah, H. (2007). Breast Cancer in Malaysia : Are Our Women Getting The Right Message? 10 Year-Experience in A Single Institution In Malaysia. *Asian Pacific Journal of Cancer Prevention, 8*, 141-145.

Townsend, M. (2008). *Essentials of psychiatric mental health nursing* (4 ed.). USA: F. A. Davis Company.

Tsitsis, N., & Lavdaniti, M. (2014). Quality of Life in Women with Breast Cancer. *International Journal of Caring Sciences, 7*(1), 38-42.

Vahidi, M., Mahdavi, N., Asghari, E., Ebrahimi, H., Ziaei, J. E., Hosseinzadeh, M., . . . Kermani, I. A. (2016). Other Side of Breast Cancer: Factors Associated with Caregiver Burden. *Asian Nursing Research, 10*, 201-206. doi: http://dx.doi.org/10.1016/j.anr.2016.06.002

Walshe, C., Roberts, D., Appleton, L., Calman, L., Large, P., Lloyd-Williams, M., & Grande, G. (2017). Coping Well with Advanced Cancer: A Serial Qualitative Interview Study with Patients and Family Caregivers. *PLoS One, 12*(1). doi: 10.1371/journal.pone.0169071http://dx.doi.org/10.1371/journal.pone.0169071

WHO. (2014). Indonesia *World Health Organization- Cancer Country Profiles* (Vol. 2014): WHO.

Zhang, Q., Yao, D., Yang, J., & Zhou, Y. (2014). Factors Influencing Sleep Disturbances among Spouse Caregivers of Cancer Patients in Northeast China. *PLoS One, 9*(10). doi: 10.1371/journal.pone.0108614 http://dx.doi.org/10.1371/journal.pone.0108614

THE EFFECT OF EDUCATION ON PARENTS' "SPEAK UP" KNOWLEDGE REGARDING PATIENTS SAFETY IN HOSPITAL

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ABSTRACT

Introduction: Safety is a global issue in hospitals. Unexpected events or errors related to health services occur in children, and about 75% are associated with medical procedures. Parental involvement becomes one of the strategies used to improve patient safety. Families who know patient safety can educate themselves to prevent and detect errors that occur during treatment. Education can improve the general knowledge about patient safety. The Speak Up program is recommended by JCAHO to improve effective communication, and this program has a preventive impact on human error. This study aims to determine the effect of education on parent's 'speaking up' knowledge regarding patient safety in the Children's Wards of Dr. Sardjito Hospital in Yogyakarta. **Methods:** This research study was quasi-experimental using a one group pre-test and post-test design. The intervention in this research was education. The consecutive sampling technique was used with a total of 62 respondents selected. The Speak Up questionnaire and observation sheet to get to know the changes in the knowledge of Speak Up was used to collect the data. The data analysis used a Paired Sample T-Test. **Result:** The result of the paired T-test showed a p-value <0,001 (p <0,05) which means that there was a significant influence by way of education on parent's speak up knowledge regarding patient safety. **Conclusion:** Education improved the parents' speak up knowledge about patient safety.

Keywords: Education, Patient Safety, Speak up

INTRODUCTION

Patient safety strategies are designed to avoid, prevent and minimise unexpected events as a result of healthcare practices.The definition of patient safety is to reduce the risk of unnecessary actions to a minimum level in the provision of health services (WHO, 2009; Runciman *et al*., 2009).

Safety is a global issue in hospitals. In developing countries, one in ten patients is estimated to be injured during hospitalisation. Every 100 patients, approximately seven in developed countries and ten in developing countries, have infections related to health services (WHO, 2015). Based on the reports of patient safety incidents in January to April 2010, the West Java Province ranks first for adverse events (33,33%), followed by Banten and Central Java (20%), and then DKI Jakarta (16,67%), Bali (6,67%), and East Java (3,33%). Adverse events are caused by issues with procedures, documentation, and medications (KKPRS, 2010). Errors associated with health services also occur in children. Children are very vulnerable to medical errors as they are totally dependent on the communication and the other behaviours of adults in preventing the occurrence of errors (Cox *et al*., 2012). In addition to vulnerability, as children are in a stage of growth and development, they require special attention when it comes to their safety (Schatkoski *et al.*, 2009).

Parental involvement in improving patient safety is one of the strategies that need to be undertaken to support the quality and safe environments in health care organisations (Schatkoski *et al*., 2009; *American Academy of Pediatrics,* 2012). This level of parental involvement has a positive impact on the quality of the health services, patient and family satisfaction and cost-effectiveness (*American Academy of Pediatrics,* 2012). According to Ottosen (2015), parents want to be involved as a partner in improving their child's safety in the hospital.

Related to these strategies, the Joint Commission Accreditation of Health Organization (JCAHO) recommended speak up as a method that can be used to improve the channels of communication between the health workers with patients and families in achieving patient safety goals. JCAHO launched the *Speak Up™ Patient Safety Program* in 2002. The program has been used in more than 40 countries (The Joint Commission, 2015).

In a survey conducted by The Joint Commission regarding the *Speak Up™ Patient Safety Program*, it found that 83% of respondents stated that speak up encourages and educates patients and includes them as being partners in their care. 83% of respondents believed that speak up was easy to

use, and 83% of the respondents also believed that speak up carried value for the healthcare organizations. 69% of respondents would recommend the program to their colleagues, friends, family members or patients. The *Speak Up^{TM} Patient Safety Program* can be used not only by the patients themselves but also by their families (The Joint Commission, 2015).

The involvement of patients and their families in improving patient safety is influenced by autonomy, awareness, and knowledge (Buetow et al., 2013). Longtin et al. (2010) suggested that patients and their families with safety knowledge can educate themselves in order to prevent human errors by the health workers while detecting errors occurring during care in the preparation, monitoring, and follow-up of an action.

Abdi et al. (2012) argued that education increases knowledge, attitudes, and behaviour about patient safety. In some studies,it was also reported that speak up behaviour increased after interventions (Sayre et al., 2012; Johnson and Kimsey, 2012). Hesitation in speak up is an important factor in communication errors. Hence there needs to be training as an effective way of improving speak up behaviour (Okuyama et al., 2014).

MATERIALS AND METHODS

The research was a quasi-experiment with a one group pre-test and post-test design to determine the effect of education on parent's knowledge of Speak Up in relation to patient safety. The study was conducted in the Children's Wards of one of the public hospitals in Yogyakarta from October 2016 until March 2017. The participants in this study were parents with children being treated in the Children's Wards. Samples were taken using the consecutive sampling technique with a total of 62 respondents.

The independent variable was education while the dependent variable was Speak Upknowledge about patient safety. The Speak up knowledge questionnaire and the Speak Up observation sheet were used to collecting the data. Data analysis using Paired Sample T-Test with a significance value of α = 0,05 and CI = 95% was used. The study was approved according to the protection of human rights and welfare in the medical research division by the Ethical Committee of the Faculty of Medicine at the Universitas Gadjah Mada, Yogyakarta. The research flow of the study can be seen in Figure 1.

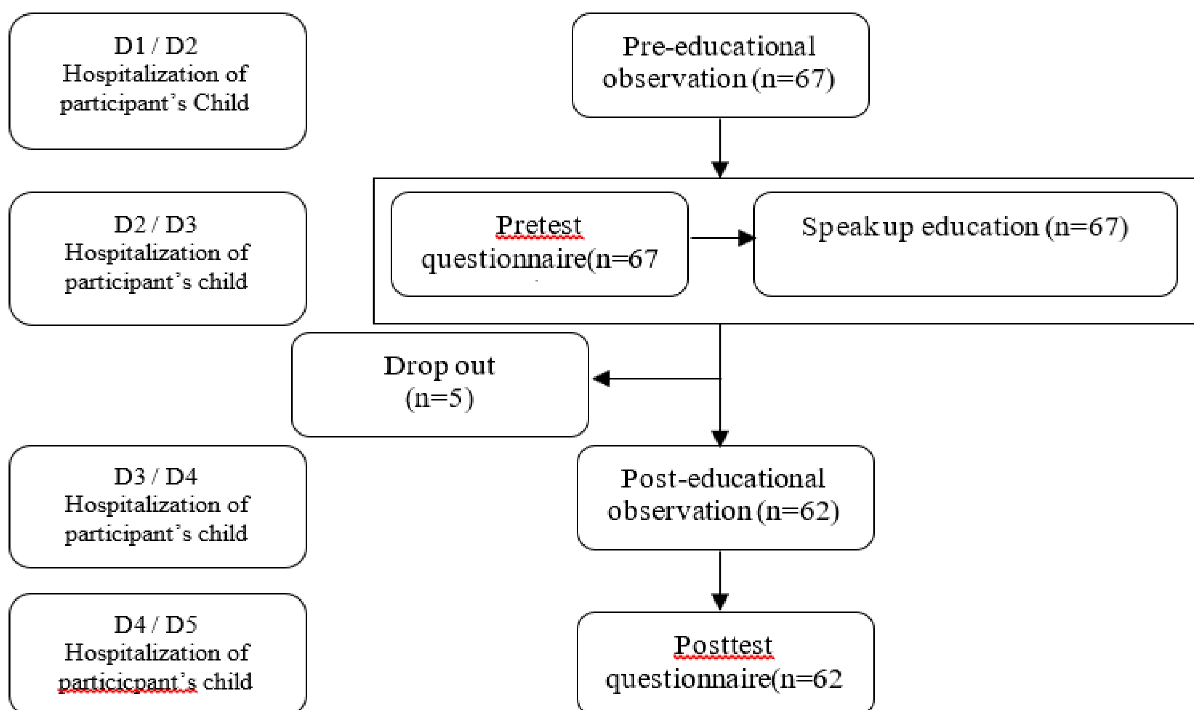

Figure 1. The flow of the research

RESULTS

The demographic characteristics of the 62 participants included age, gender, education,occupation and their previous knowledge about Speak Up. Most of the participants were aged 31-40 years old (43,5%). More than two thirds (77, 4%) of the participants were female, and almost half of them (41,9%) were high school graduates. More than half of the participants (59,7%) worked as a housewife. The majority of the participants (91,9%) had never heard of the Speak Up program.

Table 1 showed that the mean of the parents' Speak Up knowledge increased after the intervention with the highest mean being in relation to the prevention of infection by hand washing. The means of the parent's Speak Up knowledge increased except in the following areas of care advocacy (advisor/supporter), medicine explanation, insertion area infection, hospital accreditation and the health personnel who are in charge of the care.

The differences in the parents' Speak Up knowledge about patient safety pre- and post-education are shown in Table 2. The means of Speak Up knowledge about patient safety was decreased in 8 participants and increased in 44 participants. The paired T-test results showed significance at $p<0,001$. The $p<0,05$ and CI scores did not pass through zero which showed significant mean differences in the parents' Speak Up knowledge about patient safety pre- and post-education (see Table 2).

Table 1. Means of parent's speak up knowledge about patient safety in Children's Wards of Dr. Sardjito Hospital Yogyakarta (n=62)

Speak Up about patient safety items	Knowledge pre education	Knowledge post education
	Mean (Std. Dev.)	Mean (Std. Dev.)
Definition of speak up about patient safety		
Item 1. Definition of patient safety	0,9032 (±0,29806)	0,9516 (±0,21633)
Speak up if you have questions or concerns		
Item 2. Use translator	0,5323 (±0,50303)	0,7258 (±0,44975)
Pay attention to the care your children get		
Item 3. Infection prevention by washing hands	0,3226 (±0,47128)	0,6774 (±0,47128)
Item 4. How to do the patient identification	0,5806 (±0,49748)	0,8710 (±0,33747)
Item 5. The time to do patient identification	0,5968 (±0,49455)	0,7258 (±0,44975)
Educate yourself and children about the illness		
Item 6. The source of information	1 (0)	1(0)
Item 7. Information recording	0,4677 (±0,50303)	0,7903 (±0,41040)
Ask your trusted family member or friend to be advocate on your children care		
Item 8. Advocate task	0,8871 (±0,31906)	0,7581 (±0,43175)
Item 9. Advocate personnel	0,4194 (±0,49748)	0,7581 (±0,43175)
Know what medicines your children take and why it is taken		
Item 10. Medicines explanation	0,9677 (±0,17813)	0,9516 (±21633)
Item 11. The insertion area infection report	1 (0)	0,9839 (±0,127)
Use a health care organization that has been carefully checked out		
Item 12. Hospital selection	0,9677 (±0,17813)	1 (0)
Item 13. Hospital accreditation	0,6613 (±0,47713)	0,6452 (±48237)
Participate in all decisions about your children treatment		
Item 14. Family role	0,4355 (±0,49987)	0,5161 (±0,50382)
Item 15. Health personnel in charge of the care	0,0645 (±0,24768)	0,484 (±0,21633)

Table 2. Paired T-test results on parent's Speak up knowledge about patient safety pre and post education (n=62)

	Mean	Deviation	CI95%	P value
Speak up knowledge pre intervention(n=62)	9,81 (±1,62)	1,6 (2,0)	1,09 – 2,11	<0,001
Speak up knowledge post intervention (n=62)	11,40 (±1,82)			

DISCUSSION

The study was conducted for six months from October 2016 to March 2017 in the Children's Wards of one public hospital in Yogyakarta. The study was conducted in the Yogyakarta Hospital as it is an accredited hospital (Joint Commission International Accreditation) where one of the accreditation assessments is related to patient safety.

The patient's involvement through support for Speak Up is a way of reducing unexpected events and will increase the outcome of patient safety (Saufi, 2003). The recognition and support towards Speak Up for health professionals as well as from the patients and their families is a form of transformation to improve the patient's safety culture in relation to health care (Donnelly *et al*. 2010; Blanco *et al*., 2009; Spruce, 2014). Research on communication in healthcare has been conducted because it significantly contributes towards the outcomes of unexpected events (Pierce, 2016).

The study showed that the means of the parent's Speak Up knowledge is higher on the definition of patient safety, drug explanations, reporting insertion area infection, and hospital selection items. There is an increase in knowledge after education on the patient's safety definition, the use of a translator, infection prevention, patient identification, information recording, care advocating, hospital selection and the health care personnel in charge.

The parents' Speak Up knowledge had the highest increasing means after education on infection prevention by hand washing. In the provision of new patient information, one of the information materials is an explanation of how to handwash correctly. The family are taught the purpose and the technique of hand washing. The new patient information was given for a limited time and included a considerable amount of material. During the parents' Speak Up education about patient safety, the parents were educated on the importance of handwashing and to remind the healthcare personnel to wash their hands as a way to prevent infections in their children.

The education is conducted as a way to provide information and to examine the influence on the parent's Speak Up knowledge about patient safety. The study showed that education has a significant influence on improving the parent's Speak Up knowledge about patient safety.

The result of this study is supported by the research conducted by O'Connor *et al.* (2013) on interns about the effect of Speak Up training. In that study, the knowledge increased significantly, and there was a change in the attitude of the interns. However, the training did not affect the behaviour of the trainee to speak up about patient safety. Sayre et al. (2012) stated that the educational intervention improved the behaviour of 'speaking up'in the nurses and increased their score of speaking up. Lawrence et al. (2011) showed that the parent's knowledge increased after being given education using a booklet as the information source. The advantage of using a booklet as the information source was the influence on learning memories as this method can be read over repeatedly (Arsyad, 2010).

Barzallo *et al.* (2014) did a study on the surgeon's Speak Up training.The motivation to Speak Up about patient safety was performed by 82% of surgeons in a Speak Up support group where 30% in the group were not provided support to Speak Up. The increasing use of Speak Up knowledge cannot be separated from the support of the healthcare personnel.

Many factors influence Speak Up. For patients and families, Speak Up is influenced by the ability to recognise changes in clinical conditions, confidence, trustworthiness, culture and the health care systems (Rainey et al., 2013). There is two main factors affecting Speak Up; personal and health care organisation (Lyndon et al., 2015). According

to Rainer (2015), Okuyama et al. (2014), and Garon (2012), personal factors that can affect Speak Up include communication skills and educational background. The current study showed that the parent's educational background is dominated by a high school education level. Approximately 70% of parent's education of high school or below. These results need to be followed by further research to know better about the influence of educational background towards Speak Up knowledge.

The results of the pre- and post-educational observations indicate that education cannot be attributed to Speak Up actions in isolation. Law and Chan (2015) suggested that learning to Speak Up requires more than one occurrence of training. Mentoring in the education process is needed to create a safer environment (Law and Chan, 2015).

Hrisos and Thomson (2013) stated that sometimes patients and families are afraid to Speak Up because it may be considered rude and shows no respect towards the healthcare personnel. Patients and their families found that they could comfortably Speak Up with healthcare personnel who were better known than other professionals whom they had just met. Obstacles to Speak Up can include the presence of others, knowledge, limited time and fear of speak (Schwappach & Gehring, 2014). The parents found that advice directed to the healthcare personnel can be a problem because it is considered as being a form of distrust between the patients and healthcare personnel where the patients or families do not want it to happen (Peat et al., 2010). Goelts and Hatlie (2002), cited in Peat et al. (2010) suggested that asking whether the health care personnel were washing their hands or not was a form of Speak Up that should be conducted by the patients and their families. However, they chose not to ask the question. The parents tended to choose silence and did not ask, implying lack of trust to cause them to avoid mentioning any problems with health care personnel (Peat et al., 2010).

Nacioglu (2016) and Garon (2012) stated that one of the factors that affect Speak Up is cultural background. Qingzue (2003) and Claramita et al. (2013) reported that communication was strongly related to cultural characteristics. Indonesia, as an Eastern country, has a different style of communication from Western countries. Communication for Asian people is more often indirect and implicit, in contrast to Western culture which is known for being assertive, with aggressive communication behaviours (Claramita et al., 2013).

CONCLUSIONS

Educational interventions influenced the parents' Speak Up knowledge to do with patient safety. There is an increase in knowledge after education on patient safety has been provided.

Parents need to be educated continuously on Speak Up about patient safety. Further research is required regarding the implementation of patient safety by nurses, the factors influencing the implementation of the parents' Speak Up about patient safety and the effect of education on *speaking up* using a control group.

REFERENCES

Abdi, Z., Delgoshaei, B., Ravaghi, H., Heyrani, A. (2012). Changing Medical Student's Knowledge, Skills, and Attitudes About Patient Safety. *HealthMED*, Volume 6, Number 9

American Academy of Pediatrics.(2011). *Policy Statement: Patient and Family-Centred Care and Pediatrician's Role.* Retrieved January 17, 2016, from http://www.pediatrics.org/cgi/doi/10.1542/peds.2011-3084

Arsyad, Azhari. (2010). *Media Pembelajaran*. Jakarta: PT Raja GrafindoPersada

Barzallo S.M.J., Minkoff H., Bayya J., Gillett B., Onoriode H., Weedon J., Altshuler L., Fisher N. (2014). Influence of Surgeon Behavior on Trainee Willingness to Speak Up: A Randomized Control Trial. *Journal of the American College of Surgeons.* Nov, 219(5):1001-7. doi: 10.1016/j.jamcoolsurg.2014.07.933

Blanco, M., Clarke JR., Martindeli D. (2009). Wrong Site Surgery Near Misses and Actual Occurrences. Association of peri-Operative *Registered Nurses Journal*. ;90(2):215-8,221-2. doi: 10.1016/j.aorn.2009.07.010

Buetow, S., Davis R., Callaghan K., Dovey S.(2013). What Attributes of Patient Affect Their Involvement in Safety? A

Key Opinion Leaders Perspective. *British Medical Journal* Open;3:e003104. doi: 10.1136/bmjopen-2013-003104

Claramita, M., Mubarika D.F., Nugraheni, van Dalen, J., van der Vleuten, C.(2013). Doctor-Patient Communication in Southeast Asia: a Different Culture? *Advance in Health Sciences Education*; 18:15-31. doi:10.1007/s10459-012-9352-5

Cox, E.D., Carayon, P., Hansen, K.W., Rajamanickam, V.P., Brown, R.L., Rathouz, P.J., et al. (2012). Parent Perception of Children's Hospital Safety Climate. *British Medical Journal Quality and Safety*; 22(8):664-671. doi: 10.1136/bmjqs-2012-001727

Donelly, FL., Dickerson MJ, Goodfriend AM., Muething ES. (2010). Improving Patient Safety in Radiology: Concepts for a Comprehensive Patient Safety Program. *American journal of Roentgenology*;194(5):1183-7. doi: 10.2214/AJR.09.3875

Garon M.(2012). Speaking Up, Being Heard: Registered Nurses Perceptions of Workplace Communication. *Journal of Nursing Management*; 20(3):361-71.doi: 10.1111/j.1365-2834.2011.01296.x.

Hrisos, S., Thomson, R. (2013). *Seeing It from Both Sides: Do Approaches to Involving Patients in Improving Their Safety Risk Damaging the Trust between Patient and Healthcare Professionals?* An Interview Study. PloS ONE 8(11): e80759. doi:10.1371/journal.pone.0080759

Johnson, HL., Kimsey, D. (2012). Patient safety: Break the Silence. Association of peri-Operative *Registered Nurses Journal*, 95(5):591–601. doi: 10.1016/j.aorn.2012.03.002

KKPRS. (2010). *Laporan Insiden Keselamatan Pasien.* Retrieved January 10, 2015, from www.inapatsafety-persi.or.id/umpan_balik/laporan_ikp2.pdf

Law, Y.B., Chan, A.E. (2015). The Experience of Learning to Speak Up: a Narrative Inquiry on Newly Graduated Registered Nurses. *Journal of Clinical Nursing*;24(13-14): 1837-48. doi: 10.1111/jocn.12805

Lawrence, KS., Stilley CS, Pollock JA, Webber SA, Quivers ES. (2011). *A Family-Centred Educational Program to Promote Independence in Pediatric Heart Transplant Recipients. Progress in Transplantation*; 21(1):61-6

Longtin, Y., Sax, H., Leape, L.L., Sheridan, S.E., Donaldson, L., Pittet, D. (2010). Patient Participation: Current Knowledge and Applicability to Patient Safety. *Mayo ClinicProceedings*;85(1):53-62. doi: 10.4065/mcp.2009.0248

Lyndon, A., Johnson MC., Bingham D., Napolitani PG., Joseph G., Maxfield DG., O'Keeffle DF. (2015). Transforming Communication and Safety Culture in Intrapartum Care: a Multi-Organization Blueprint. *Journal of Obstetric,Gynecologic& Neonatal Nursing*; 44(3):341-9. doi: 10.1111/1552-6909.12575

Nacioglu, Ahmet. (2016). *As a Critical Behavior to Improve Quality and Patient Safety in Health Care: Speaking Up!. Safety in Health* (2016) 2:10. doi: 10.1186/s40886-016-0021-x

O'Connor, P., Byrne D, O'Dea A., McVeigh TP., Kerin MJ. (2013). "Excuse Me" Teaching Intern to Speak Up. The Joint Commission*Journal onQuality and Patient Safety*; 39(9): 426-31. doi: 10.1016/S1553-7250(13)39056-4

Okuyama, A., Wagner, C., Bijnen, B. (2014). Speaking Up for Patient Safety by Hospital-based Health care Professionals: A Literature Review. *BioMedCentral Health Service Research*, 14:61. doi: 10.1186/1472-6963-14-61

Ottosen, M.J. (2015). *Parent Perceptions of Patient Safety Culture in the Neonatal Intensive Care Unit*. UT SON Dissertation. Texas Medical Center Library

Peat, M., Entwistle, V., Hall, J., Birks, Y., Golder, S. (2010). Scoping Review and Approach to Appraisal of Interventions Intended to Involve Patients in Patient Safety. *Journal of Health Services Research & Policy*, Vol 15 Suppl 1. doi: 10.1258/jhsrp.2009.009040

Pierce, BR. (2016). Speaking Up: It Requires Leadership Maturity. *Nurse Leader*; 14(6):413-418. doi: 10.1016/j.mnl.2016.08.005

Rainer, J. (2015). Speaking Up: Factors and Issues in Nurses Advocating for Patients When Patients are in Jeopardy. *Journal of Nursing Care Quality*; 30(1):53-62. doi: 10.1097/NCQ.0000000000000081

Rainey, H., K. Enrich, N. Mackintosh, J. Sandall. (2013). The Role of Patient and Their Relatives in 'Speaking Up' About Their Own Safety – a Qualitative Study of Acute Illness. *Health Expectation*, 18, pp.392-405. doi:10.1111/hex.12044

Runciman, W., Hibbert, P., Thomson, R., van der Scaaf, T., Sherman, H., Lewalle, P. (2009). Towards an International Classification for Patient Safety: Key Concepts and Terms. *International Journal for Quality in Health Care*;21(1):18-26. doi: 1.1093/infqhc/mzn057

Saufi, N.M. (2003). *Patient Encouraged to "Speak Up"*. Retrieved April 4, 2016, from http://ac.els-cdn.com.eproxy1.lib.hku.hk/S1089947203000054/1-s2.0-S108947203000054-main.pdf?_tid=339caeb8-a6e5-11e5-b6c0-00000aab0f27&acdnat=1450594085_daf5fe7b7d3660645b216bf2d8000b

Sayre, M.M., McNeese-Smith, D., Leach, LS., Phillips, LR. (2012). An Educational Intervention to Increase "Speaking-Up" Behaviors in Nurses and Improve Patient Safety. *Journal of Nursing Care Quality*, 27(2):154–60.doi: 10.1097/NCQ.0b013e318241d9ff.

Schatkoski, A.M., Wegner, W., Algeri, S., Pedro, E.N.R. (2009). Safety and Protection for Hospitalized Children: Literature Review. *Revista Latino-Americana deEnfermagem*; 17(3):410-6. doi: 10.1590/S0104-11692009000300020

Schwappach, DL., Gehring K. (2014). Trade-offs, Between Voice and Silence: A Qualitative Exploration of Oncology Staff's Decision to Speak Up About Safety Concern. *BioMed Central of Health Service Research*. 14;14:303. doi: 10.1186/1472-6963-14-303

Spruce, L. (2014). Back to Basics: Preventing Surgical Site Infections. Association of peri-Operative *Registered Nurses Journal*; 99(5):600-8. doi: 10.1016/j.aorn.2014.02.002

The Joint Commission. (2015). *Facts About Speak Up*. Retrieved November 15, 2015, from http://www.jointcommission.org/facts_about_speak_up/

WHO. (2009). *A World Alliance for Safer Health Care. More Than Words: Conceptual Framework for the International Classification for Patient Safety*. Version 1.1. Final Technical Report. Geneva: WHO

______.(2015). Patient Safety. Retrieved April 23, 2015, from http://www.who.int/patientsafety/en/

PHYSICAL FUNCTION–TARDIVE DYSKINESIA (PFTD) ON CRITICAL PATIENTS IN INTENSIVE CARE UNIT

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ABSTRACT

Introduction: Critical patients are patients who potentially get reversible dysfunction in one or more life-threatening organs and require care in the Intensive Care Unit (ICU). **Methods:** The objective of this research is to analyse the physical function-tardive dyskinesia in critical patients with sedation in the ICU. The design of this research is cross-sectional. The population is all of the critical patients in the ICU of the Baptist Hospital in Kediri. The purposive sample population was 41 respondents based on the inclusion and exclusion criteria. The variables are 'giving the sedation' and 'physical function-tardive dyskinesia'. The data was collected using a Motor Activity Assessment, and the Sedation Scale for Critically Ill Patients and Tardive Dyskinesia Screening. **Results:** The results showed that giving sedation can slow physical function in the form of motor activity; the response of noxious stimuli (7.3%), response to touch or calling name (19.5%) and an increasing score of agitation and co-operative (4.9%). Symptoms of tardive dyskinesia increased after sedation in the form of tongue protrusion (4.9%), lip-smacking, puckering and pursing (2.4%), and rapid movements of the arms and legs. The administration of sedation in the first 24-hours in ICU patients affects the physical function of the critical patients (p = 0.005). **Conclusions:** Giving sedation affects the patients' physical functions. Therefore, the prevention of the effects of sedation and treatment during ICU is needed in order to avoid a decrease in the physical function of critical patients.

Keywords: critical patient, ICU, physical function, sedation, tardive dyskinesia

INTRODUCTION

Critical patients are patients who potentially get reversible dysfunction in one or more life-threatening organs, and require treatment in the Intensive Care Unit (ICU) (Ireland, 2011; Marianne, 2016). The prevalence of critical patients in ICUs continues to increase every year. The World Health Organization (WHO) in 2016 reported that deaths from critical illness through to chronic illness in the world increased by 1.1 to 7.4 million people and that there were 9.8 to 24.6 critical ill patients and treated in ICU per 100,000 population (Garland *et al.*, 2013). Post-ICU patients have a wide range of potential health problems from previous treatments in the ICU. Patients with post-ICU problems are commonly referred to as having post-intensive care syndrome (PICS). Post-Intensive Care Syndrome is a health problem that persists for long periods after the patient leaves the ICU and it is a very important nursing problem that needs to be resolved (Davidson *et al.*, 2013). Post-Intensive Care Syndrome is a collection of three symptoms of a given problem or disorder in the form of the worsening picture of the weakness status of physical function, cognitive function and anxiety (mental health) during critical illness and after the patient is out of the ICU (Needham *et al.*, 2012). Critical patients directly relate to the discomfort that has non-cooperative effects. The patient will describe pain with various verbal or non-verbal manifestations. Critical patients treated in an intensive space with discomfort will receive sedation therapy. Critical patients experience sedation due to the medical management performed by health workers in intensive care. Giving opioids to reduce the pain response, anxiety or involuntary motions is important because the pathological disease makes it necessary. Sedation in the form of opioids can affect the condition of the bodily functions and depress the central nervous system. Sleep Deprivation is the result of agitation-sedation. Sedation management can have the side effects of sedation and the risk factors are highest amongst the elderly to do with analgesic and sedative treatment (Carson *et al.*, 2006). Respiratory depression may occur as a frequent effect. Nurses should be able to identify and analyse the agitation state of the given sedation. The visible effects can be either verbal or non-verbal in relation to the patient response. If the nurse cannot know and analyse the end result of the sedation effect and the action to be taken, then the patient's condition may get worse because they cannot be assessed quickly by the nurse. The patient's

critical condition needs a quick and precise assessment.

Critical patients during ICU will lose 20% of their muscle volume, and 70% of their proteins in a week (Pandharipande *et al.*, 2013). The study also found that out of 476,862 patients (60% -80% of total post-ICU patients), 30% of them were unable to return to work (non-productive) due to muscle loss of 1% -2% each day after the patient left the ICU (Cartwright, 2012; Davidson *et al.*, 2013). Patients with a loss of muscle function can be observed from the motor activity and reaction conditions of the sedation process. The decreased cognitive function is associated with decreased brain oxidative metabolism that causes neurotransmitter changes in the prefrontal and subcortical regions, or when there is a decrease in cholinergic and increased dopaminergic activity when serotonin levels and GABA (Gamma-Aminobutyric Acid) levels are significant (Nathan E, Brummel, James C. Jackson, 2013). The results showed that cognitive impairment occurred in 24% - 34% of the patient sample. The decrease in cognitive function is similar to that of traumatic brain injury (34%) and the patients are similar to those with Alzheimer's disease and delirium (24%). (Cartwright, 2012; Iwashyna *et al.*, 2012; Needham, 2012; Davidson *et al.*, 2013; Pandharipande *et al.*, 2013; Jackson *et al.*, 2014; T. J. Iwashyna, 2014; Sottile, Peter, Amy Nordon-Craft, Daniel Malone, Darcie M. Luby, Margaret Schenkman, 2015).

Physical and cognitive impairment is caused by a history of mechanical ventilation (33%), infection or sepsis (50%), spending 2 weeks to >1 week in ICU (> 50%), delirium and various critical illnesses or sepsis (70%), Coronary Heart Disease (36.6%), CHD Unstable Angina (UA) (41.5%), Hypertension (19.5%), Supraventricular Tachycardia (SVT) (2.4%), and the signs and symptoms of tardive dyskinesia (Davidson *et al.*, 2013; T. J. Iwashyna, 2014; Hoffman and Guttendorf, 2015; Suwardianto, 2016). The main causative factors are long-term care (≥2 days) and minimal mobilisation. Other causative factors include previous medical history (health status and previous disease history), acute illness, critical illness (liver disease, hypoxia, hypotension, glucose dysregulation, respiratory failure, shock, CHF (Congestive Heart Failure), sepsis and other diseases of similar severity, inflammation, loss of strength, sedation, and increased anxiety levels (Needham, 2012; Needham *et al.*, 2012; Hopkins, 2013; Jackson *et al.*, 2014; T. Iwashyna, 2014). If in ICU, then the problem will arise and impact on the health of post-ICU patients.

The impact of the decreased physical functions associated with motor degradation (motor activity) will worsen and weaken the function of the other organs if not immediately prevented in ICU (Nathan E, Brummel, James C. Jackson, 2013). The impact of physical function in ICU patients and after they are out of the ICU is down to the increased length of treatment, decreased cognitive function, decreased physical function (organs, muscle contractions, function and pain, vitality, fatigue), and worsening mental health (anxiety), emotional responsiveness, depression, reflectiveness, loneliness and the inability to perform activities and the use of instruments in everyday life. The phenomenon of post-ICU post-cognitive decline in relation to physical function and cognitive implications indicates a decline in the health of the patients, especially to do with the physical, cognitive and mental health functions of anxiety, and the need for intervention strategies in the ICU in its prevention. The prevention to minimise the incidences of post-ICU physical and cognitive impairment should be performed in accordance with the role of critical nurses.

MATERIALS AND METHODS

The design of this research is cross-sectional. The population is all of the critical patients in the Intensive Care Installation of Baptist Hospital, Kediri. The sample population size is 41 respondents according to the inclusion criteria of patients who received the first 24 hours of their treatment in Intensive Care. The data collected was done using an instrument of Motor Activity Assessment, the Sedation Scale for Critically Ill Patients and Tardive Dyskinesia Screening. The Motor Activity Assessment scale (MASS) was developed by Devlin in 1999. MAAS is valid and reliable for use on patients in the ICU (Devlin, 1999). The data collection has been done after completing the research proposal. The researcher get ethical clearance from KEPK Medical Faculty of Diponegoro University with letter number 150 / EC / FK-

RSDK / IV / 2017, and the researcher submitted and achieved research permission from Diponegoro University Semarang to Director of RS. Baptist Kediri. The researchers also obtained approval from the Director of the Hospital, Baptist Kediri, and initiated data collection at the ICU. The researcher obtained informed consent before doing the research. The subjects, if willing, signed the approval sheet. The researcher gave clear information to the respondent's family/guardian regarding the purpose and procedure of the research before collecting the data. The researcher convinced the respondent's family that the research had an adverse effect on the prospective respondent, and the researcher gave the opportunity for them to ask if it was not clear. The study was conducted for 1 month in July 2017. The data was collected by direct measurements from the patients and an observation of the patient's response. The data analysis was done with distribution frequency, cross-tabulation and an Independent T-Test with < 0,05.

Table 1. Characteristics of Respondent (n=41)

Characteristics	Frequency (f)	Percentage (%)
Gender		
Male	15	36,6
Female	26	63,4
Age		
< 35	1	2,4
35 – 39 Years	1	2,4
40 – 44 Years	4	9,8
45 – 49 Years	7	17,1
50 – 54 Years	3	7,3
> 55 Years	25	61,0
Medical diagnosis		
CHD	15	36,6
CHD UA	17	41,5
CHD UA+HT	8	19,5
CHD SVT	1	2,4
Sedation		
Morphine 2,5 mg IV prn	41	100

Note: CHD: Coronary heart disease;
UA: unstable angina; HT: Hypertension;
SVT: Supraventricular Tachycardia;
mg: milligrams; prn: Pro Re Nata.

RESULTS

The results of the research of critical patients in relation to general data, cardiac workload, Sedation Scale for the Critical Ill and Physical Function-Tardive Dyskinesia are described in Table 1.

Table 1 shows that most of the respondents are male (63.4%). Most of the respondents are >55 years of age (61.0%). The respondents diagnosed with UA (unstable angina) was 41.5% of respondents. All of the respondents were given morphine sedation of 2.5 mg IV prn. The demographic data of the critical patients in ICU shows that most of the women were aged >55 years old. This is possible because after 55 or 60 years (menopausal stage), hypertension is more prevalent in women (estrogen-prevalent hormone loss) than in men (Suwardianto and Selvia, 2015). The respondents, in the first 24-hours of assessment in ICU, showed that the patients were installed heart monitors, oximetry monitors to measure oxygen saturation, and identification of the patient's gender, age, and medical diagnosis. When the critical patients had anxiety and showed non-cooperative behaviour, then the nurses gave them morphine; 2,5 mg IV.

Table 2 shows that there was a decrease in systolic blood pressure (SBP) (7.0 mmHg), diastolic blood pressure (DBP) (6.4 mmHg), heat rate (1.5 times/min) and respiration rate (0.5 Times / min). An increase in oxygen saturation was as high as 0.2%. The data shows the systolic blood pressure before giving sedation consisting of morphine 2.5 mg having a mean of 131.7 mmHg and 15 minutes after sedation decrease 7.0 mmHg with a mean systolic blood pressure of 124,7 mmHg. The diastolic blood pressure prior to morphine sedation of 2.5 mg was the mean of 88.1 mmHg and 15 minutes after sedation; this decreased by 6.4 mmHg with a mean of diastolic blood pressure of 81.7 mmHg. Heart rate before being given morphine of 2.5 mg had a mean of 87.0 times / minute and 15 minutes after sedation; this decreased the heart rate by 1.5 times per minute with a mean of 85.5 times per minute. Respiration rate prior to morphine sedation od 2.5 mg had a mean of 24.4 times / min (Tachypnea) and 15 minutes after sedation this decreased by 0.5 times per minute with a mean respiration rate of 23.4 times per minute (Tachypnea). Oxygen

Table 2. Characteristics of Cardiac Workload Respondents (n=41)

Indicators	***Mean***		**x_1- x_2**
	Before Sedation (x_1)	**15 Minutes after Sedation (x_2)**	
Systolic Blood Pressure (mmHg)	131,7	124,7	-7,0 mmHg
Diastolic Blood Pressure (mmHg)	88,1	81,7	-6,4 mmHg
Heart rate (beat/minute)	87	85,5	-1,5 time/minutes
Respiration rate (beat/minute)	24,4	23,4	-0,5 time/minutes
Oxygen saturation (%)	98,5	98,8	0,30 %

saturation prior to morphine sedation of 2.5 mg had a mean of 98.5% and 15 minutes after sedation this increased by 0.3% to 98.8% oxygen saturation. CHD patients treated at the Intensive Care Installation performed the overall observation using a pre-set cardiac monitor.

Based on Figure 1, it was found that the Sedation Scale for Critically Ill Patients before and after the patient got sedation was on a scale of 2 (36.6% to 34.4%).

Figure 2 shows that the decrease in physical function was found prior to sedation. Physical function of scale 2 (responsive to touch or name) was in as much as 15 respondents (36.6%), and after sedation, most critical patients had a physical function measurement of scale 3 (Calm and cooperative) in as many as 25 respondents (61.0%). Critical patients who had decreased physical function and cognitive function were patients observed as being agitated through to agitative. Physical Function occurred in the form of motor activity after sedation in conditions that were responsive only to noxious stimuli (7.3%), responsive to touch or name (19.5%) and had an agitation and co-operative score (4.9%).

The characteristics of physical dysfunction in patients with Tardive Dyskinesia signalling approach in patients with CHD before sedation showed 5 signs of Tardive Dyskinesia whereas 15 minutes after morphine sedation of 2.5 mg via IV, all signs of Tardive Dyskinesia arose, despite an increase in the respondents who showed no signs of Tardive Dyskinesia in 26 respondents to 30 respondents. The patients showed repetitive grimacing, lip smacking, puckering, pursing and rapid movements of the arms and legs. It is a response to the discomfort interpreted throughout the central nervous system after the termination of treatment. Signs and symptoms of Tardive Dyskinesia increased after sedation in the form of tongue protrusion (4.9%), lip smacking, puckering and pursing (2.4%), and rapid movements of the arms and legs.

A paired sample t-test was conducted to compare Tardive Dyskinesia before sedation and 15 minutes after sedation. There was no significant difference in the score before sedation and 15 minutes after sedation (p=0,317, Mean=9, SD=1.9). A paired sample t-test was conducted to compare Physical Function before sedation and 15 minutes after sedation. There was a significant difference in the score before sedation and 15 minutes after sedation (p=0.005, Mean=0.09, SD=2.4). These results suggest that sedation really does have an effect on the physical function of critically ill patients in ICU.

DISCUSSION

Based on the results of the study, the provision of sedation does not affect the changes in the physical function indicator of Tardive Dyskinesia (0.317). The characteristics of a physical function under Tardive Dyskinesia in critical patients before and after sedation shows that the patients have repetitive grimacing, lip smacking, puckering, pursing, and rapid movements of the arms and legs. It is a response to the discomfort interpreted through the myelin of the central nerves. The decline in the physical function aspect of Tardive Dyskinesia is a neurological syndrome associated with the prolonged use of neuroleptic drugs. The characteristics of tardive dyskinesia are repetitive facial movements, uncontrolled movements (involuntary) and unintentional movements. Tardive dyskinesia is found by the cessation of

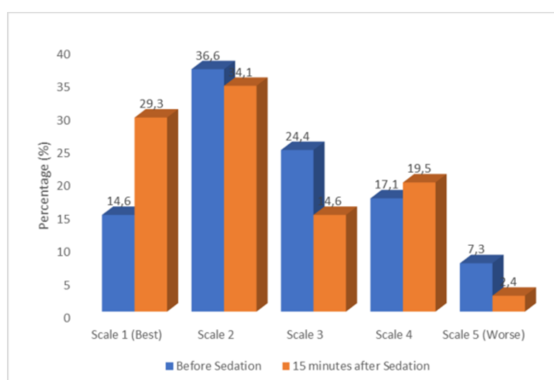
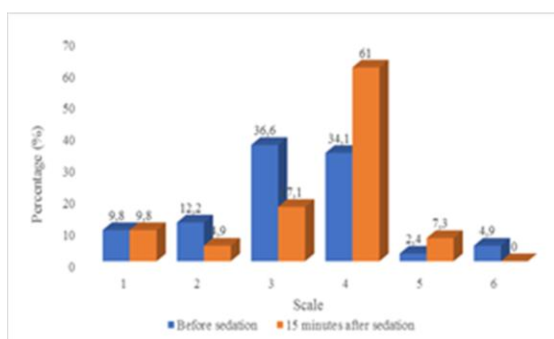


Figure 1. Characteristics of Sedation Scale for Critically Ill Patients on Critical patients in Intensive Care Unit (n=41)



Notes: (Barr *et al.*, 2013; Aitken, Marshall and Chaboyer, 2016): Scale 0: unresponsive; Scale 1: responsive only to noxious stimuli; Scale 2: responsive to touch or name; Scale 3: calm and cooperative; Scale 4: agitated; Scale 5: dangerously agitated uncooperative.

Figure 2. Physical Function on Critical patients in Intensive Care Installation (n=41)

suffix treatment. The symptoms may be present during treatment and after treatment was discontinued. Tardive Dyskinesia includes repetitive grimacing, tongue protrusion, lip smacking, puckering, pursing, rapid eye blinking, and rapid movements of the arms and legs. The results showed that no significant change was possible as the respondents still responded to neuroleptic associations and some of the respondents still received a strong sedation titration (Morphine). Tardive dyskinesia presented in the patients because of rapidly changing neurologic myelin due to changes in the sedation dose or the cessation of sedation.

Based on the results of the research, it was found that sedation has an influence significantly on Physical Function (p = 0,005) and the condition of the decreasing of physical and cognitive function manifests in the form of agitation. Based on the results of the research, it was found that the Physical Function measurements before being given sedation resulted in the patients responding when touched or called by their name manifested in 15 respondents (36.6%). Physical Function after the sedation of most critical patients resulted in them being calm and cooperative manifested in 25 respondents (61.0%). Physical Function, which is described as a decrease in physical and cognitive function, is possible in patients who get sedation and can lead to a state of agitation. The patients can be described as being unresponsive – those that cannot move or move with the noxious stimulus (suctioning, sternal pain response). The patients could also respond to noxious stimuli; i.e. opening their eyes, raising their eyebrows, turning their head and arm movements. The respondents could also show responsiveness towards touch or their name (scale 2), using their eyebrows, turning their head, arm movements by touch or calling their name aloud. The patients are expected to be calm and cooperative in their response (scale 3) i.e. no external stimulus that occurs for the occurrence of movement, and the patient means that they can adjust to the movement and follow the command. Restless and cooperative patients (scale 4) means that the patient can take a blanket or glass, cover himself, and follow orders. Patients experiencing agitated circumstances (scale 5) i.e. no external stimuli are patients trying to stand, have the movement of their arms out of bed and do not consistently follow commands. In this condition, the patients can be in a dangerously agitated and uncooperative (scale 6). Uncooperative patients are patients that withdraw their gastric tube or urinary catheter, whack/attack officers and are not calm when asked. The results showed that sedation significantly influenced Physical Function where the sedation response was in the form of morphine 2.5 mg. It could decrease the motor activity level of the patient which initially means that patients with agitation could be lowered to a more cooperative level. The role of the nurse in knowing the condition of the patient before and after the sedation changes

Table 4. Tardive Dyskinesia in Critical patients at Intensive Care Installation (n=41)*

Indicators	**Before Sedation (x_1)**		**15 Minutes after Sedation (x_2)**		**x_1- x_2**
	Fr	**%**	**Ff**	**%**	**%**
There is no sign of Tardive Dyskinesia	26	63,4	30	73,1	9,7
Have signs and symptoms of Tardive Dyskinesia	15	36,6	11	26,9	-9,7
• Repetition grimacing	5	12,2	3	7,3	-4,9
• Tongue Protrusion	1	2,4	3	7,3	4,9
• Lip smacking, puckering, and pursing	0	0	1	2,4	2,4
• Rapid eye blinking	1	2,4	1	2,4	0
• Rapid movements of the arms and legs	11	26,8	7	17,1	-9,7

Notes: *) The patient may show more than one sign on the Tardive Dyskinesia indicator or even none at all. Sign (-) is a decline in value; Fr: Frequency)

Table 5. Analysis of Variables on Sedation administration in Critical patients at Intensive Care Installation (n=41)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Tardive Dyskinesia	9.00000	1.90010	.40510	-.75155	.93337	.224	21	,317
Pair 2	Physical Function	.09091	2.44949	.52223	7.91396	10.08604	17.234	21	,005

the motor response due to relaxation. The nurse must be able to know the conditions through the motor activity indicator. Excessive motor responses can increase heart burden and anxiety in patients, but patients who are able to achieve relaxation with or without sedation will be warned of the potential parasympathetic activity of the nerves, particularly those of the Vagus (Suwardianto, 2014). This can decrease the cardiac workload in critical patients with anxiety.

Based on the results of the sedation studies, sedation affects the Sedation Scale for Critically Ill Patients (0.005). The result showed that the sedation scale for Critically Ill Patients before and after the patient got sedation was on a scale of 2 (36.6% to 34.4%). Poor agitation is where the movement of the body, unwillingness to undergo treatment/procedures or restrictions of the movement of the body significantly endangers both patients and officers. The Sedation Scale for Critically Ill Patients is an assessment tool specifically used by nurses in identifying the agitation scale in critical patients. Indicators of the Sedation Scale for Critically Ill Patients are consciousness, agitation, anxiety, sleep, and patients with attached ventilators. Consciousness identifies that the patient is awake, conscious of himself and the environment (good orientation). Agitation identifies that the patient affects the patient's body/patient safety. The anxiety indicator is that the nurses see the patient's anxiety (Faces Anxiety). The sleep indicator is when the nurse observes sleep and the sleep quality perceived by the patient. The indicator of the patient with an attached ventilator is where the nurse observes the respiratory pattern relative to the ventilator. The results show that there is a significant change in agitation scale that indicates that agitation decreases with sedation. The agitation scale gets worse; the worse the patient's condition, the more it also affects the condition of the patient's response in healing in the nursing area. Patients, after being given morphine sedation 2.5 mg IV, were at level 2 before and after. The better the patient and the patient's cooperativeness, the

more the patient will be able to show good conscience.

The results show that there is a decrease in systolic blood pressure (SBP) (7.0 mmHg, diastolic blood pressure (DBP) (6.4 mmHg, Heat rate (1.5 times / min), respiration rate (0, 5 times / min.) and a 0.2% oxygen saturation increase. Critical patients with CHD have a disease condition in which the blood vessels that supply food and oxygen to the heart muscle are blocked. The blockage is most often the result of cholesterol build-up in the coronary vein wall (Kurniadi, 2013). The combination of hypoxia, decreased energy availability and acidosis rapidly will impair the function of the left ventricle. The contraction of the affected part of the heart muscle will decrease because the muscle fibres are not sufficiently shortened so that the strength and acceleration of the resulting flow decreases. Moreover, in the ventricular wall, an abnormal movement occurs in ischemia so that the blood circulated in each contraction will decrease. Blood through the coronary arteries will restore normal aerobic metabolism and cardiac contractility. However, if the blood flow cannot be recovered, then myocardial infarction will occur.

The results of the research show that there is a change before and after being given sedation on cardiac workload, i.e. SBP decreased by 7.0 mmHg, DBP decreased by 6.4 mmHg, HR decreased 1.5 times/ min, RR decreased 0.5 times / minute, and there was an increase of 0.2% oxygen saturation in critical patients. The role of the nurse in identifying the cardiac workload needs to be improved, and there is a need for collaboration in nursing actions to improve the repair of the cardiac workload. The identified cardiac workload, i.e., blood pressure, HR, RR, and SaO2 have all changed from the baseline before sedation. The administration of sedation to provide a calming effect may result in a change in the value of the cardiac workload after 15 minutes after sedation in the form of morphine 2.5 ml. Giving sedation improves the parasympathetic response to the cardiac workload, so the nurses should be able to monitor meaningful changes after sedation. The role of the nurse becomes very important in identifying and implementing independent actions as the result of anxiety identification rather than strengthening the effects of sedation alone. They must be able to support patients in reducing anxiety, agitation, or pain by providing self-interventions and environmental modification. Critical nurses are expected to be able to apply effective management (transformation) by developing themselves in their communication, critical thinking and being able to change the environment (Suwardianto, 2015), so that nursing care in critical patients can have a gold standard in establishing the quality of nursing care in patients.

CONCLUSIONS

The characteristics of physical dysfunction in patients with Tardive Dyskinesia signalling approach in patients showed 5 common signs. Patients show repetitive grimacing, lip smacking, puckering, pursing and rapid movements of the arms and legs. It is a response to the discomfort interpreted throughout the central nervous system after termination of treatment. Signs and symptoms of Tardive Dyskinesia increased after sedation in the form of tongue protrusion, lip smacking. Puckering, pursing and the rapid movement of the arms and legs. The results of this research suggest that sedation really does have an effect on physical function in the critically ill patients in ICU. The research shows that patients with the administration of sedation in the first 24-hours of ICU care effects physical function. The results of the study on these interventions only measure the effectiveness of the long-term disruption of physical-cognitive function and when the patient returns from the hospital. As the result of the research into early activity intervention, intervention only measures the improvement of physical function in the post-ICU patient. The results of the cognitive therapy intervention study in critical patients in the ICU only measures the increase in physical function in isolation in post-ICU patients so any other problems will still occur.

As a recommendation, sedation can affect the physical functioning of critical patients. Deep and immeasurable sedation will further impair physical functioning. Sedation management is required in the provision of collaborative nursing care. Giving sedation significantly affects the decrease in physical function. Critical care nurses are expected to be able to identify the decline in physical and cognitive function in the ICU in order to

improve the quality of care and quality of life of the patient after discharge from the ICU.

Recommendations for nursing care that can be given include the management of pain and sedation. Proper management of pain and sedation is very useful in the determination of subsequent management. The ICU nurses prior to giving patients better sedation should perform pain management first. The decrease in physical function that occurs in critical patients in ICU can be countered with physical therapy to increase muscle strength and to avoid apoptosis.

REFERENCES

Aitken, L., Marshall, A. and Chaboyer, W. (2016) *ACCCN'S critical care nursing*. 3rd edn. Australia: Elsevier Health Sciences.

Barr, J. *et al.* (2013) 'Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit', *Society of Critical Care Medicine, The American College of Critical Care Medicine (ACCM)*, 41(1), pp. 263–306.

Carson, S. S. *et al.* (2006) 'The changing epidemiology of mechanical ventilation: a population-based study', *J Intensive Care Med*, 21. doi: 10.1177/0885066605282784.

Cartwright, M. M. (2012) *The high incidence of post intensive care unit (ICU) anxiety and depression*, *Psychology Today*.

Davidson, J. E. *et al.* (2013) 'Post-intensive care syndrome', *Society of Critical Care Medicine*, 1(1), pp. 1–4.

Devlin (1999) 'Motor Activity Assessment Scale: a valid and reliable sedation scale for use with mechanically ventilated patients in an adult surgical intensive care unit', *Crit Care Med*, 27(7), pp. 1271–5.

Garland, A. *et al.* (2013) 'Epidemiology of critically ill patients in intensive care units: a population-based observational study', *Critical Care*, 17(5), p. R212. doi: 10.1186/cc13026.

Hoffman, L. A. and Guttendorf, J. (2015) *Post Intensive care syndrome: risk factors and prevention strategies*, *AHC media*.

Hopkins, R. O. (2013) 'Strategies to ensure long-term quality of life in ICU survivors', *Society of Critical Care Medicine*, 1(1), p. 1.

Ireland (2011) *National standards for adult critical care services*. Ireland: Joint Faculty of Intensive Care Medicine of Ireland (JFCMI) in association with The Intensive Care Society of Ireland (ICSI).

Iwashyna, T. (2014) 'What you need to know about post-intensive care syndrome (PICS)', *Health System-University of Michigan*, 1(1), pp. 1–3.

Iwashyna, T. J. *et al.* (2012) 'Population burden of long-term survivorship after severe sepsis in older americans', *Journal compilation © 2012, The American Geriatrics Society*, 60(6), pp. 1070–1077.

Iwashyna, T. J. (2014) 'Post-intensive care syndrome: improving the future of icu patients', *24nd Critical Care Congress Review*, 1(1), pp. 13–16.

Jackson, J. *et al.* (2014) 'Depression, post-traumatic stress disorder, and functional disability in survivors of critical illness in the brain-icu study: a longitudinal cohort study', *The Lancet Respiratory Medicine*, 2(5), pp. 369–379.

Kurniadi, H. (2013) *Stop Gejala Penyakit Jantung Koroner*. 2013: Familia.

Marianne (2016) 'About critical care nursing', *American Association of Critical-Care Nurses*, p. 1.

Nathan E, Brummel, James C. Jackson, T. D. G. (2013) 'A combined early cognititive and physical rehabilitation program for people who are critically Iil: The activity and cognitive therapy in the intensive care unit (ACT-ICU) trial', *Physical Therapy Critical Illness*, 92(12), pp. 1580–1592.

Needham, D. M. *et al.* (2012) 'Improving long-term outcomes after discharge from intensive care unit: report from a stakeholders' conference', *the Society of Critical Care Medicine and Lippincott Williams & Wilkins*, 40(2), pp. 502–509.

Needham, D. M. (2012) 'Improving long-term outcomes after discharge from intensive care unit: Report from a stakeholders' conference', *Critical Care Medicine*, 40(2), pp. 502–509.

Pandharipande, P. *et al.* (2013) 'Long-term cognitive impairment after critical illness', *The New England Journal Medicine*, 369(14), pp. 1306–1316. doi: 10.1056/NEJMoa1301373.

Sottile, Peter, Amy Nordon-Craft, Daniel Malone, Darcie M. Luby, Margaret Schenkman, M. M. (2015) 'Physical therapis treatment of patients in the neurogical intensive care unit: description of practice', *Physical Therapy*, 95(7), pp. 1006–1014.

Suwardianto, H. (2014) 'The effectiveness of deep breathing and slow stroke back massage to decrease the blood pressure on a patient with hypertension', *Indonesian Nursing Journal of Education and Clinic (INJEC)*, 1(1), pp. 1–12.

Suwardianto, H. (2015) *Buku ajar keperawatan kegawatdaruratan (perspektif, konsep, prinsip, dan penatalaksanaan kegawatdaruratan)*. 1st edn. Surabaya: PT. REVKA PETRA MEDIA.

Suwardianto, H. (2016) 'Tardive dyskenesia, motor activity, sedation scale, and cardiac workload in baptis kediri hospital', *Tardive Dyskenesia, Motor Activity, Sedation Scale, Dan Cardiac Workload*, 4(1), p. 1.

Suwardianto, H. and Selvia, D. (2015) *Buku Ajar Keperawatan Kegawatdaruratan (Perspektif, Konsep, Prinsip, dan Penatalaksanaan Kegawatdaruratan)*. Surabaya: PT. REVKA PETRA MEDIA.

THE EFFECTIVENESS OF A PAIN MANAGEMENT PROGRAM ON INTENSITY OF PAIN AND QUALITY OF LIFE AMONG CANCER PATIENTS IN MYANMAR

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ABSTRACT

Introduction: Cancer is one of the leading causes of death worldwide and is rapidly becoming a global pandemic. Cancer pain significantly affects the diagnosis, quality of life and survival of patients with cancer. The aim of this study is to analyse the effect of a Pain Management Program (PMP) on pain and quality of life in a patient with cancer. **Methods:** This study used a quasi-experimental design with a randomised pre-post test design approach. The data was collected from cancer patients in No 2 Military Hospital (500-Bedded), Yangon, Myanmar. The patients were recruited using a random allocation sampling technique and consisted of 30 respondents (experimental group) and 30 respondents (control group) taken according to the inclusion criteria. The Short Form-McGill Pain Questionnaire 2 (SF-MPQ 2) was used to assess pain, and The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30) was used to assess the quality of life. **Results:** A MANOVA test was used to analyse the effect of PMP. It showed that 1) PMP decreased the pain and 2) PMP increased the quality of life in patients with cancer. **Conclusions:** Improvements in the quality of life and to do with pain-related cancer suggests that the vicious cycle of chronic pain may be alleviated by PMP. As we look at the results, PMP can be an effective treatment to be used by nurses for decreasing pain and increasing the quality of life in patients with cancer.

Keywords: cancer, Myanmar, pain management program, quality of life

INTRODUCTION

Cancer is a leading cause of death worldwide, having killed an estimated 8.2 million people in 2013 (World Health Organisation, 2014). World cancer reports estimate that the incidences of cancer will increase to 15 million new cases in 2020 (Ashton-Prolla et al., 2009). It was estimated that there were over 700,000 new cases of cancer and 500,000 cancer deaths in ASEAN member countries each year and that this number is expected to increase (Jan et al., 2012). In Myanmar, non-communicable diseases are estimated to account for 59% of the total deaths (441,000) while the cancer mortality rate accounts for 11% (WHO, 2014).

Pain is one of the most common symptoms experienced by cancer patients; either because of the disease itself or the treatments that the cancer patients are receiving. Research has revealed that approximately 43% to 63% of cancer patients and 58% to 73% of those experiencing an advanced stage suffer from chronic pain during active cancer therapy (van den Beuken-van Everdingen *et al.*, 2007). Unrelieved pain may prompt suicidal ideation among cancer patients. Therefore, pain is the most feared consequence for many cancer patients (Holtan *et al.*, 2007). As much as 80% to 90% of cancer pain can be managed by various pharmacological and non-pharmacological methods (Breivik *et al.*, 2009), yet it is regrettable that up to 40% of cancer goes untreated (Deandrea *et al.*, 2008).

Quality of Life (QOL) can be described as the condition of well-being that consists of physical, psychological, social and spiritual aspects (Kyranou *et al.*, 2013). Cancer patients not only experience physical problems, but also psychosocial and spiritual disorders that affect their quality of life (Manuaba, 2008). Higher pain intensity in cancer patients generally can cause symptoms of depression, anxiety, fatigue and stress. It can also contribute to the psychological factors that can affect the patient's pain experience and the quality of life of the patients (Vallerand *et al.*, 2007). Therefore, care needs to be tailored to meet the needs of the cancer patients psychosocially that we can make pain management better and more functional.

Nowadays, pain management for cancer patients includes pharmacological and non-pharmacological methods. The World Health Organisation suggested a pain ladder for the treatment of cancer pain (WHO, 2014). Given the existence of all of these methods of cancer pain management, it is unfortunate when cancer pain goes untreated or undertreated (Deandrea *et al.*, 2008). The Pain Management Program (PMP) is a treatment of

choice which is based on the principles of cognitive behaviour for people with persistent pain that could make their quality of life worse. PMP aims to help clients manage pain better in the long term. PMP uses a combination of psychological, physical and practical methods to relieve the pain, physical disability and poor quality of life (The British Pain Society, 2013).

In a military setting, No 2 Military Hospital (500-Bedded) is responsible for the treatment of cancer patients and is one of the hospitals that can provide comprehensive treatment and healthcare facilities for the patients with cancer. As for the disease burden, according to the available data from the Medical Records Department of No 2 Military Hospital, 1,914 patients were admitted to the oncology ward in 2015. In general, thirty patients a day were treated with chemotherapy, and forty-seven patients were treated with radiation therapy daily.

According to Thiha (2014), among the cancer patients with pain, the most common cancers with pain are breast cancer (27.4%) and lung cancer (23.29%). According to the description of the pain, the most obvious type of pain is somatic in origin (49.32%) and neuropathic pain at 13.7%. The usual complaints of symptoms are lower back pain and chest pain. According to the duration of pain, chronic pain (73%) is more common. Cancer ultimately affects 72.60% of all cancer patients among other causes of cancer pain, treatment, debility, concurrent disorder. According to pain scores, the respondents showed moderate pain as much as 58.9% and severe pain as much as 30.14%. The results of the interviews with ten patients who were admitted to No 2 MH, Yangon, approved the statements made by officers of the department that patients often suffer from pain, especially after undergoing chemotherapy and radiotherapy. At the time of the interview, there were three nasopharyngeal cancer patients with severe pain. The patients seemed to cry and moan in pain, holding the hands of their relatives to face their dying days. Patients conveyed that the pain was felt at every moment, and it was so intense that they could not sleep or eat.

Regarding the hospital workload, about a hundred patients were admitted to the oncology ward and nine nursing personnel were assigned to this ward. The functions of the nurses in the oncology ward were mainly in a caregiver role focusing on direct health care services to the patients, health education to the patients and their families and supportive health care such as psychosocial support, spiritual care and symptom management (Medical Record Department, 2015).

Pain management is crucial in caring for cancer patients, and it involves medication as well as non-pharmacological therapies to promote comfort. Pain is the most common problem in patients with cancer, therefore giving effective and supportive treatment to those who suffer from pain is of critical importance. PMP has been developed by a team of health workers in the UK but is still not covering others. In addition, there has been no previous study applying PMP among cancer patients in Myanmar. The findings of this study can be applicable to the development of PMP to reduce the intensity of pain and to improve the quality of life among cancer patients in Myanmar, especially in the military setting. With regards to these results, the researchers recommend PMP as a form of alternative non-pharmacological therapy to reduce pain and to improve the quality of life of cancer patients in the No (2) Military Hospital (500-Bedded) Yangon, Myanmar.

MATERIALS AND METHODS

This study used a quasi-experimental design with a randomised pre-post test design approach. The data was collected from cancer patient in the No (2) Military Hospital (500-Bedded), Yangon, Myanmar. The patients were recruited by using a random allocation sampling technique and consisted of 30 respondents (in the experimental group with PMP and routine care) and 30 respondents (in the control group with routine care) taken according to the criteria. The samples were taken using the consecutive sampling method with inclusion and exclusion criteria. The inclusion criteria were cancer patients with mild to moderate pain, cancer patients who were undergoing treatment, such as chemotherapy, radiotherapy, surgical and a combination of the above.

The independent variable was PMP. The dependent variables were pain and quality of life. Confounding variables were age, sex, job, income and education level. The Short

Form-McGill Pain Questionnaire 2 (SF-MPQ 2) was used to assess the pain. This questionnaire consisted of a pain intensity scale ranging from 0 (none) to 10 (worst) (Dworkin *et al.*, 2009). This instrument has been tested regarding its validity and reliability by Dworkin *et al.* (2009) and is widely used in many countries. The European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30) that was used for assessing the quality of life had several components. Functional scales and symptoms were included in items number 1-28 with a score of 1 (never) to 4 (very often). Meanwhile, items number 29-30 were about their general health status with a score of 1 as very poor to 7 as very good. The Myanmar version of EORTC QLQ-C30 had been drawn up by EORTC itself.

The PMP survey was held for two weeks and was divided into four sections encompassing sections (1) education; section (2) guided practices, the implementation of progressive relaxation techniques; section (3) guided practices, the implementation of progressive visual distraction; section (4) evaluation. Each meeting took about 60 minutes. After all of the data was collected, the researchers conducted data analysis. The socio-demographic characteristics of the respondents were analysed using descriptive statistics. In addition, the MANOVA test was used to determine the effects of PMP and the confounding variables on pain and quality of life among respondents.

Approval and permission to conduct the study was obtained from the Research Ethics Committee of the Military Institute of Nursing and Paramedical Sciences, Myanmar, as well as a recommendation for the protection of human rights and welfare in medical research from the Ethical Committee of the Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia and also from the Commanding Officer of the Head of the Oncology Department and Nursing Superintendent of the No. (2) Military Hospital (500-Bedded), Yangon, Myanmar.

RESULTS

As shown in Table 1, there were a total of 60 respondents. 30 were in the control group, and 30 respondents were from the intervention group. The majority of the respondents from the intervention group 11(36.7%) were in the 46-55 age group. In relation to the gender grouping, 17 (56.7%) respondents were male. With regards to occupation, the highest proportion of respondents (43.3%) were soldiers. All of the respondents were not only military soldiers'

Table 1: Distribution of demographic characteristics of respondents (n= 60) in Oncology Unit, No (2) Military Hospital (500- Bedded), Yangon, Myanmar

Character-istics	**Intervention Group (n=30)**		**Control Group (n=30)**	
	n	**%**	**n**	**%**
Age				
26 - 35 years	4	13.3	3	10.0
36 - 45 years	8	26.7	5	16.7
46 - 55 years	11	36.7	14	46.7
> 55 years	7	23.3	8	26.7
Sex				
Male	17	56.7	17	56.7
Female	13	43.3	13	43.3
Job				
Soldier	13	43.3	13	43.3
Does not work	12	40.0	14	46.7
Private	4	13.3	3	10.0
Civil servant	1	3.3	0	0
Rank				
Family	17	56.7	17	56.7
Other rank	11	36.7	12	40.0
Officer	2	6.7	1	3.3
Income*				
<200	8	26.7	3	10.0
200-400	18	60.0	23	76.7
> 400	4	13.3	4	13.3
Education				
Primary				
Middle	10	33.3	6	20.0
High	12	40.0	19	63.3
Graduate	2	6.7	4	13.3
Can read or	4	13.3	1	3.3
write	2	6.7	0	0
Intervention				
Chemotherapy				
Combination	21	70.0	21	70.0
therapy	9	30.0	9	30.0
Diagnosis				
Lung cancer	10	33.3	11	36.7
CA breast	4	13.3	4	13.3
CA cervix	5	16.7	5	16.7
CA rectum	1	3.3	1	3.3
Melanoma	2	6.7	2	6.7
Sarcoma	2	6.7	2	6.7
Sarcoma	4	13.3	3	10.0
CA tongue	2	6.7	2	6.7

* in thousand kyats

Table 2: Differences in pain of cancer patients in intervention group and control (n: 60)

Variable		N	Intervention Group			Control Group			
			Mean	SD	Min-Max	N	Mean	SD	Min-Max
Pain	*Pre test*	30	4.07	1.14	2-6	30	4.37	0.72	2-6
	Post test	30	3.53	0.97	1-5	30	4.7	0.92	3-6

Table 3: Differences in quality of life of cancer patients in intervention group and control (n=60)

Variable		N	Intervention Group			Control group			
			Mean	SD	Min-Max	N	Mean	SD	Min-Max
Quality of life	*Pre test*	30	64.63	35.35	10-121	30	70.83	30.86	11-118
	Post test	30	90.07	32.55	19-145	30	71.27	23.16	29-115

and their wives but their parents and children. Regarding the source of information from the respondents, 56.7% were family members of military soldiers. Almost two thirds, 18 (60%) of the respondents, earned 200,000-400,000 kyats as their family income per month. The highest group of respondents in the intervention group (40%) had a middle school education level. More than two thirds, 21(70%), were undergoing chemotherapy. In addition, most of the respondents from the intervention group (10) (33.3%) were lung cancer patients.

According to Table 1, the data in the control group showed that most of the respondents (n=14, 46.7%) were in the 46-55 years age group, and most of them (56.7%) were male respondents. 14 out of 30 of the respondents (46.7), and 17 out of 30 (56.7%) were family members of military personnel. With regards to family income, more than two-thirds of the respondents (76.7%) earned 200,000-400,000 kyats per month. 63.3% of respondents had a middle school education level. Likewise in the intervention group, 70% of the total respondents were undergoing chemotherapy, and 11(36.7%) respondents were diagnosed with lung cancer.

As shown in Table 2, the mean pain score of the cancer patients in the intervention group was 4.37, and it decreased to 4.07. The control group gained a mean pain score in the pre-test of 4.07, and post-test this score was 4.37. It can be seen that the control group had a higher mean score of a pain than the intervention group.

Based on Table 3, the mean score of the quality of life of cancer patients in the intervention group was 64.63, and this increased to 90.07, while the control group mean score of the quality of life in the *pre-test* was 70.83 and *post-test* were 71.27. The results showed that the intervention group had a higher mean score of quality of life than the control group.

Based on Table 4, it can be seen that, in general, there are differences in mean pain and the quality of life between the treatment and control groups. The results show that the value of *Hotteling's trace* sig. 0.000 was smaller than α 0.05, so it is stated that there was a difference in pain and quality of life between the treatment group and the control group.

Table 5 shows that there was a difference in pain with p = 0.000 and quality of life with p = 0.013 between the treatment group and the control group. However, there was no significant difference between the functional scales (p= 0.186) and the symptomatic scales of quality of life (p= 0.051). There was only a significant difference in the general health scales (p=0.000). It can be seen that PMP reduces pain and improves QOL only in relation to the general health scales.

DISCUSSIONS

The findings of this study confirmed that PMP reduced the intensity of pain in cancer patients. Compared with the patients from the control group, the pain scores were significantly reduced. We found that the worst pain intensity in the intervention group was lower than in the control group and this showed a significant difference. These findings are in accordance with earlier studies that found that PMP decreased patients' pain.

Based on the research conducted by Tse *et al.* (2012) on patients in palliative care and cancer patients hospitalised in Hong Kong, it was found that after the implementation of a PMP (using PRN drugs and non-pharmacological methods), the pain

Table 4: Differences test between intervention and control group (n=60)

Effect		***Value***	**F**	**Hypothesis df**	***Sig***
PMP	*Pillai's trace*	0.284	11.293[b]	2.000	0.000
	Wilk's lambda	0.716	11.293[b]	2.000	0.000
	Hotteling's trace	0.396	11.293[b]	2.000	0.000
	Roy's largest root	0.396	11.293[b]	2.000	0.000

Table 5: Results of analysis between intervention and control group (n=60)

Variable	**Mean Square**	***Df***	**F**	***P value***
Pain	20.417	1	20.417	0.000
QOL	5301.600	1	5301.600	0.013
QOL- FS	299.267	1	1.789	0.186
QOL- SS	303.750	1	3.979	0.051
QOL- GH	1440.600	1	14.041	0.000

scale decreased significantly in the two groups (intervention and control), as well as significantly so in decreasing the barrier to pain management. Pain is influenced by several factors. Some of the factors that affect pain include physiological factors (age, gender, weakness or fatigue, genes, neurological function), social factors (attention, previous experience), spiritual factors, psychological factors (anxiety, coping technique), and cultural factors (meaning of pain, ethnicity). In the present study, the decrease in pain intensity after the PMP could be interpreted as a positive for patients with cancer. Because the treatment of chronic pain in many cancer patients is difficult, this positive effect of PMP on pain intensity can be considered to be clinically important (EORTC, 2003). According to the findings of this study, as well as in previous studies, we can conclude that performing PMP for patients with cancer can indirectly lead to the acceptance of pain for the patients as they mentioned in the sessions, or indirectly assist the healthcare providers in reducing the patient's pain. It is better to use non-pharmaceutical treatment alongside medication for the better management of pain (Aubin *et al.*, 2006; Lai *et al.*, 2004).

Based on the findings of this study, a majority of the respondents from the intervention group had quality of life in the poor category before being given the PMP, as found through The European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30) (Scott *et al.*, 2008). Cancer is a life-changing thing. For some people, cancer provides opportunities to self-introspect and enhance the meaning of life. But overall, cancer will affect the physical, social, psychological, and spiritual well-being of individuals (Potter & Perry, 2010). According to Fitriana and Ambarini (2012), most cancer patients feel that they are in a period of crisis that requires adjustment, and each patient will require different adjustments depending on their perceptions, attitudes and personal experiences related to self-acceptance to change. According to the researcher, the changes associated with the disease condition experienced were received differently in each patient, so this condition will affect the quality of life of cancer patients.

In relation to the principle scoring of EORTC QLQ-C30, high scores showed that the higher the level of quality of life means a high score on a functional scale which showed that the higher the level of function of health, means that a high score in the health status and a generally high quality of life. A high score on the symptom scales showed a higher the level of problems or existing symptoms (Aaronson *et al.*, 1993). In addition, there is also the research and arguments indicating the influence of cultural factors on quality of life. In this study, by comparing the mean quality of life scores between both groups before and after the intervention, the patients' quality of life improved in the intervention group and decreased in the control group. Based on our results after the intervention, the scores related to the quality of life and general health scale increased significantly in the intervention group, while the functional scale and symptoms scale did not differ significantly

compared with the control group. Liang *et al.* (2015) revealed that the patients' reports of pain intensity and pain interference were significantly correlated with quality of life. Participants who experienced higher levels of pain and interference reported lower levels in the functional and global domain of quality of life and a higher level in the symptom domain of quality of life. The findings of this study showed that PMP reduced the intensity of pain in cancer patients. Compared with patients from the control group, the pain scores were significantly reduced. It can be concluded that reducing pain intensity reflects an improving quality of life in cancer patients with pain.

Indeed, in patients who received PMP, the pain scores were significantly reduced, and there were improved QOL scores after 2 weeks compared with those who received standard care in this study.

CONCLUSIONS

To the best of our knowledge, this is the first study evaluating the effects of PMP in cancer patients experiencing pain in Myanmar. The results of the present study showed that PMP decreased pain intensity and improved the quality of life of cancer patients. It is suggested that if it is introduced into clinical practices of standard care, this type of PMP could have the potential to improve the quality of pain management for the great majority of cancer patients. However, this study had some limitations. Findings from this study may not be generalised to cancer patients in other settings or other countries. Furthermore, the present study population was drawn from cancer patients from a military setting. Therefore, the generalisation of these findings to individuals living in other geographic regions is limited. Also, we studied a relatively small number of patients with cancer who had pain at a single institution. Future studies may follow on from this study with a larger sample size from multiple institutions. In addition, we suggest a further comparison of the effectiveness of PMP with other types of non-pharmacological pain interventions among cancer patients.

REFERENCES

Aaronson, N. K. *et al.* (1993) 'The European Organisation for Research and Treatment of Cancer QLQ-C30: A quality-of-life instrument for use in international clinical trials in oncology', *Journal of the National Cancer Institute*, 85, pp. 365–376. doi: 10.1093/jnci/85.5.365.

Ashton-Prolla, P. *et al.* (2009) 'Development and validation of a simple questionnaire for the identification of hereditary breast cancer in primary care', *BMC Cancer*, 9(1), p. 283. doi: 10.1186/1471-2407-9-283.

Aubin, M. *et al.* (2006) 'Impact of an Educational Program on Pain Management in Patients With Cancer Living at Home', *Oncology Nursing Forum*, 33(6), pp. 1183–1188. doi: 10.1188/06.ONF.1183-1188.

van den Beuken-van Everdingen, M. *et al.* (2007) 'Prevalence of pain in patients with cancer: a systematic review of the past 40 years', *Annals of Oncology*, 18(9), pp. 1437–1449. doi: 10.1093/annonc/mdm056.

Breivik, H. *et al.* (2009) 'Cancer-related pain: a pan-European survey of prevalence, treatment, and patient attitudes', *Annals of Oncology*, 20(8), pp. 1420–1433. doi: 10.1093/annonc/mdp001.

Deandrea, S. *et al.* (2008) 'Prevalence of undertreatment in cancer pain. A review of published literature', *Annals of Oncology*, 19(12), pp. 1985–1991. doi: 10.1093/annonc/mdn419.

Dworkin, R. H. *et al.* (2009) 'Development and initial validation of an expanded and revised version of the Short-form McGill Pain Questionnaire (SF-MPQ-2)', *Pain*. International Association for the Study of Pain, 144(1–2), pp. 35–42. doi: 10.1016/j.pain.2009.02.007.

Fitriana, N. A. and Ambarini, T. K. (2012) 'Kualitas Hidup Pada Penderita Kanker Serviks Yang Menjalani Pengobatan Radioterapi', *Jurnal Psikologi Klinis dan Kesehatan Mental*, 1(2), pp. 123–129.

Holtan, A. *et al.* (2007) 'Prevalence of pain in hospitalised cancer patients in Norway: a national survey.', *Palliative Medicine*, 21(1), pp. 7–13. doi: 10.1177/0269216306073127.

Jan, S. *et al.* (2012) 'The socioeconomic burden of cancer in member countries of the Association of Southeast Asian Nations (ASEAN)--stakeholder

meeting report', *Asian Pacific journal of cancer prevention : APJCP*, 13(2), pp. 407–409. doi: 10.7314/APJCP.2012.13.2.411.

Kyranou, M. *et al.* (2013) 'Differences in depression, anxiety, and quality of life between women with and without breast pain prior to breast cancer surgery', *European Journal of Oncology Nursing*, 17(2), pp. 190–195. doi: 10.1016/j.ejon.2012.06.001.Differences.

Lai, Y. *et al.* (2004) 'Effects of brief pain education on hospitalized cancer patients with moderate to severe pain.', *Supportive Care in Cancer*, 12(9), pp. 645–652. doi: 10.1007/s00520-004-0626-1.

Liang, S. Y. *et al.* (2015) 'The impact of pain on the quality of life of Taiwanese oncology patients', *Pain Management Nursing*. American Society for Pain Management Nursing, 16(2), pp. 128–136. doi: 10.1016/j.pmn.2014.05.009.

Mahamed, F. (2012) 'Impact of Family Planning Health Education on the Knowledge and Attitude among Yasoujian Women', 4(2), pp. 110–118. doi: 10.5539/gjhs.v4n2p110.

Manuaba, T. W. (2008) *Masalah Kanker di Indonesia*. Universitas Udayana.

Medical Record Department (2015) *Admission rate of oncology ward*. Yangon.

Scott, N. W. *et al.* (2008) 'EORTC QLQ-C30 Reference Values', *EORTC Quality of Life Group*, (July), p. 419. Available at: https://pdfs.semanticscholar.org/71d3/de2b6d58bf321da160a43a99777538a206d8.pdf%0Ahttp://groups.eortc.be/qol/sites/default/files/img/newsletter/reference_values_manual2008.pdf.

The British Pain Society (2013) *Cancer Pain Management: A perspective from the British Pain Society, supported by the Association for Palliative Medicine and the Royal College of General Practitioners*, *The British Pain Society's Cancer Pain Management*. London: The British Pain Society.

Thiha, S. (2014) *Clinical Study of physical Pain in Cancer Patients*. DSMA, Mingalardon.

Tse, M. M. Y. *et al.* (2012) 'The Effect of a Pain Management Program on Patients With Cancer Pain', *Cancer Nursing*, 35(6). Available at: http://journals.lww.com/cancernursingonline/Fulltext/2012/11000/The_Effect_of_a_Pain_Management_Program_on.7.aspx.

Vallerand, A. H. *et al.* (2007) 'Factors that affect functional status in patients with cancer-related pain', *Pain*, 132(1), pp. 82–90. doi: https://doi.org/10.1016/j.pain.2007.01.029.

WHO (2014) *Noncommunicable Diseases (NCD) Country Profiles*. Geneva. doi: 10.4135/9781412994170.n207.

World Health Organization (2014) *Cancer pain relief*, *Cancer pain relief*. Available at: papers://d30f2a22-a1cf-4822-9292-0ad49fba75fc/Paper/p1288.

IMPROVING NURSING WORK SERVICES THROUGH DEVELOPMENT MODEL OF QUALITY OF NURSING WORK LIFE

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ABSTRACT

Introduction: The performance of nurses in a hospital is influenced by the mental and emotional state of the nurse; the higher the workload, the greater the work stress of the nurse. It is a necessity to conduct research to explain a quality of nursing work life model based on the context of Indonesian nurses. **Methods:** The research process consisted of two stages: observational analytic and model trial. The first phase used cross-sectional design with cluster random sampling technique and obtained 102 samples. The second stage used a quasi-experiment design with pre-post test with control group design and obtained 33 samples. The data was analysed by Partial Least Squares and paired t-test analysis. **Results:** It was found that the number of the nurses with Burnout Syndrome in the hospital was 67.6%. The depersonalisation indicator in the low category was 73.5%, and the high category of self-achievement indicators had 89.2%. **Conclusions:** It can be concluded that improving the performance of care services is more effective through improving the quality of nursing work life. This study found that the nurses' quality of life affected the increased nursing work service because their working scope involves interacting with other professions and the environment.

Keywords: quality of nursing work life model, burnout syndrome, self-achievement

INTRODUCTION

The performance of nurses in a hospital is influenced by the mental and emotional state of the nurse; the higher the workload, the greater the work stress of the nurse. Burnout Syndrome is a manifestation of high stress in working; this term refers to the syndrome of prolonged stress that occurs in the workplace where the result is a combination of workers and their work (Papalia, Olds and Feldman, 2007). Based on the research of Cañadas-De la Fuente *et al.* (2015), the prevalence of Burnout Syndrome in from a mental fatigue aspect was 25% on the emotional fatigue dimension, 30% in the dimension of depersonalisation and 45% in the self-achievement dimension. Indonesia Ministry of Health conducted a survey which found that 10% of patients felt dissatisfied with health services in hospitals (Dinas Kesehatan Propinsi Jawa Tengah, 2012). According to Ministerial Decree no. 129 year 2008 on hospital minimum service standards, inpatient satisfaction standard was ≥ 90%, or patient dissatisfaction standard was ≤ 10% (Abdurrouf, Nursalam and Purwaningsih, 2013). Another research from Suharti and Daulima (2013) presented their research result in Metropolitan Jakarta hospital, in which most of the nurses had moderate (86.7%) and high (3.6%) burnout syndrome.

Based on the preliminary study held at one of regional public hospitals of Semarang it was found that, from 20 nurses, there were eight experiencing burnout syndrome. This shows that the incidence rate of burnout syndrome in this hospital was about 40% out of 20 sample nurses. The prevalence of *burnout syndrome* was almost the same in most hospitals (de Paiva *et al.*, 2016); this is due to the high demand of hospitals to nurses to work according to the best standards, which requires great physical and psychological activity from nurses in giving nursing care.

The nursing profession as an integral part of the healthcare system is a critical factor in the success of health services in general and the key to the success of hospital services in particular. Nursing services still need many innovations, such as medical services to increase patient satisfaction as a consumer (Nursalam, 2014). Morsy and Sabra (2015)said that 66.7% of nurses had experienced job dissatisfaction, which was influenced by organisational culture factors, nurse job characteristics, nursing work quality and burnout syndrome. Burnout syndrome is a dominant factor in decreasing service performance in hospitals (Gilbert Khosa *et al.*, 2014; Khamisa *et al.*, 2015; Thulth and Sayej, 2015).

The low quality of nursing service can be caused by many factors, such as quality of nursing work life and burnout syndrome (Manwatkar and Mathew, 2016). A study of (Suresh, 2013) conducted in several hospitals in India found that 48% of nurses had a bad

QNWL (Quality Nursing Work Life). Khamisa *et al.* (2015) in Africa, found nurses with emotional exhaustion contributed to 14% of treatment while emotional exhaustion and depersonalisation contributed 31% in reducing the performance of nursing service in the hospital.

According to previous research by Momeni *et al.* (2016) regarding quality of nursing work life in Mazandaran, Iran scored 27,2% of quality of nursing work life as low, 61.7% was categorised as average, and 6.7% had good quality of nursing work life. This situation shows that most of the quality of nursing work life is low, which can be an indicator of stress for nurses that work in the hospital.

Mark and Smith (2012) stated that many factors cause stress in nurses, such as a conflict with a doctor, discrimination, over workload, handling many patients, patients' death and problem with patients' families. Beh (2016) held a research about stress impact on nurses which showed that 52% resulted in headache, 43% caused anger, 38% caused fatigue, 38% caused low interpersonal interaction and 24% caused low concentration. On the other hand, Nishitani, Sakakibara and Akiyama (2013) concluded that lack of sleep was one of the causes of depression for employees and anxiety syndrome for employees.

Efforts to reduce stress in nurses can be made through reforming the quality of nursing work life. A study by Borhani *et al.* (2016) in Teheran, Iran, concluded that the reforming of quality of nursing work life can improve the nursing service that is given to patients and the quality of nursing work life can increase nurses' role towards organisation of the nursing profession. The previous research shows the quality of nursing work life has positive impact and significance toward nursing work (Manwatkar and Mathew, 2016). Meanwhile, Borhani *et al.*, (2016) concluded that the improvement of medical service in hospitals can be started from moral improvement and learning through the environment around the hospital.

Based on the description of the background above, it is necessary to develop a quality of nursing work life in accordance with the condition of nurses in Indonesia. The development of this model will be a solution in reducing the level of nurse stressors in Indonesia in providing therapeutic care in hospitals.

MATERIALS AND METHODS

The research process consisted of two stages, the first was observational analytic research and the second was a quality of nursing work life model. The first phase used cross-sectional design with cluster random sampling technique. The sample population were 102 samples. The variables in this research were analysed by using Structural Equation Modelling (SEM), in such a way that the minimum samples needed were 100 – 150 subjects. The number of samples for the first research had six variables, so this research needed 17 indicators with six variables, which was equal to 102 samples.

There were two variables in this research, exogenous and endogenous. The *exogenous* variable consists of organisational culture, nurse factors, job characteristics, and quality of nursing work life. Meanwhile, *endogenous* consists of *burnout syndrome* and nursing service. The data analysis used univariate analysis and then analysed using PLS (partial least square). PLS is an indeterminacy factor of powerful analytical methods used to confirm the theory (Ghozali, 2014).

The second stage used a quasi-experiment design with pre-posttest with control group design. The method used in the intervention was a structural model which emphasised the process of socialisation, externalisation, combination and internalisation. The provision of interventions used modules. The number of samples was calculated based on Sastroasmoro and Ismael (2011) formula and obtained 33 samples then performed simple random sampling. Data analysis used univariate analysis and bivariate analysis (paired t-test).

Data collection used questionnaires that contained questions according to the research variables. The study was conducted at the Dr. Adhyatama, MPH Regional Public Hospital of Semarang in the surgical wards and paediatric wards around July - September 2017. This research passed the ethical clearance conducted at Faculty of Medicine Diponegoro University and was registered with number 454/EC/FK-RSDK/VII/2017. The researcher asked consent from

respondents upon their agreement to participate on this study.

RESULTS

Table 1 shows that the mean age of nurses is 32.76 years, which belong to the productive age. Based on the educational status it was found that the largest percentage is nurses with a bachelor degree, or 54.9% while the lowest educational background is a master degree (1%). This situation indicates that most qualifications are bachelor degree, which is appropriately matched with the standard. Marital status of respondents was mostly married (79.4%)

Table 2 shows the lowest organisational culture is the success criteria with the low category of 15.7% and the mean is 2.28. Success criteria are an indicator of self-achievement for nurses. In addition to the success criteria, the organisational factors that are still low are the orientation of the organization, with 31.4% and an average of 2.42. This is followed by strategy emphasis indicator, which is equal with 33.3%, and 31.4% organisational orientation. Organisational culture of nurses' indicator of closeness of good category organisation showed a percentage of 75.5% with mean 2.63.

Table 3 shows that the characteristics of nurses on the medium criterion indicator is 49.0% with mean 3.67, while the mental indicator model in the good category has a percentage equal to 91.2% with mean 4.26. The mental model is an assumption held by every individual and organisation that can determine how to act.

Table 4 shows the indicator of job variation with the low criterion of 27.5% with the mean of 0.61, while the job feedback indicator on the good criterion is 42.2%. Task

Table 1. Demographic characteristic of the respondents

Characteristic of the nurse	n	%
Age	102	32.76±5.9 (Mean & SD)
Education		
Vocational degree	45	44.1
Bachelor degree	56	54.9
Master degree	1	1,0
Doctoral degree	0	0
Marital status		
Single	18	17.6
Married	81	79.4
Widower	3	2.9

Table 2. Distribution of organisational culture

Organisational culture	Criteria			Total (%)	Mean	Score
	Good (%)	Moderate (%)	Bad (%)			
Organisational orientation	66 (64.7)	32 (31.4)	4 (3.9)	102 (100)	2.42	1-3
Organisational leadership	71 (69.6)	18 (17.6)	13 (12.7)	102 (100)	2.49	1-3
Management of staff	55 (53.9)	35 (34.3)	12 (11.8)	102 (100)	2.46	1-3
Organizational closeness	77 (75.5)	22 (21.6)	3 (2.9)	102 (100)	2.63	1-3
Strategy emphasis	62 (60.8)	34 (33.3)	6 (5.9)	102 (100)	2.43	1-3
Success criteria	51 (50.0)	35 (34.3)	16 (15.7)	102 (100)	2.28	1-3

Table 3. Distribution characteristics of nurses.

Characteristics of the nurse	Criteria			Total (%)	Mean	Score
	Good (%)	Moderate (%)	Bad (%)			
Commitment	82 (80.4)	20 (19.6)	0 (0.0)	102 (100)	3.88	1-5
Mental Model	93 (91.2)	6 (5.9)	3 (2.9)	102 (100)	4.26	1-5
Motivation	81 (79.4)	21 (20.6)	0 (0.0)	102 (100)	3.94	1-5
Attitude	52 (51.0)	50 (49.0)	0 (0.0)	102 (100)	3.67	1-5

Table 4. Distribution of job characteristics of nurses.

Job characteristics	Criteria			Total (%)	Mean	Score
	Good (%)	Moderate (%)	Bad (%)			
Work feedback	43 (42.2)	46 (45.1)	13 (12.7)	102 (100)	0.76	0-1
Task Variety	11 (10.8)	63 (61.8)	28 (27.5)	102 (100)	0.61	0-1

Table 5. Distribution of burnout syndrome

Nursing Work Service	Criteria			Total (%)	Mean	Score
	High (%)	Medium (%)	Low (%)			
Emotional Fatigue	2 (2.0)	31 (30.4)	69 (67.6)	102 (100)	1.64	0-6
Depersonalisation	3 (2.9)	24 (23.5)	75 (73.5)	102 (100)	1.24	0-6
Self-achievement	91 (89.2)	9 (8.8)	2 (2.0)	102 (100)	5.19	0-6

Table 6. Distribution of service performance

Service Performance	Criteria			Total (%)	Mean	Score
	Good (%)	Moderate (%)	Low (%)			
Nursing Care Standard	101 (99.0)	1 (1.0)	0 (0.0)	102 (100)	4.54	1-5
Professional Performance Standard	102 (100)	0 (0.0)	0 (0.0)	102 (100)	4.52	1-5
Nursing Satisfaction	31 (30.4)	69 (67.6)	2 (2.0)	102 (100)	3.43	1-5

Table 7. Results of the model development of the working quality model of nurses' work (QNWL) on increased nursing work service at the hospital

Relationship between variables	Coefficient	Information
Organisational culture with QNWL	0.55	Significant
Characteristics of the nurse with QNWL	0.33	Significant
QNWL with nurse performance	-1.07	Significant

variations include discussion with peers, seminars, workshops or continuing education.

Table 5 shows that the burnout syndrome among nurses with the indicator of low emotional fatigue category is 67.6% with the mean of 1.64. Emotional fatigue is characterized by physical, mental or emotional fatigue that lasts for a long time. The depersonalisation indicator in the low category was 73.5% with an average of 1.24, characterised by less sensitivity or less care towards the patient and a tendency to withdraw from the work environment. The highest category of self-achievement indicators has a value of 89.2%, which includes feelings of helplessness, disrespect and feeling the tasks imposed on the official are too great.

Table 6 shows that service performance applied to the nursing care standard indicator is 99.0% with 4.54 average, as well as 100% professional performance standard with a mean of 4.52.

Based on the model analysis results obtained it shows that the organisational culture affects QNWL. Characteristics of nurses significantly affect QNWL and QNWL significantly affects service performance. Based on the model results, it can be concluded that improving the performance of care services can be done more effectively through QNWL.

DISCUSSION

The relationship of organisational culture to the performance of nurses

In this study, the researcher found that there is a significant correlation between organisational culture and nurse performance. This situation can be caused by organisational culture that can cause changes in work rhythm, especially for nurses. The existence of a new policy can affect the work patterns of the hospital, such as leadership and system changes. In this study, the hospital that was chosen was a government hospital, so that service performance that is often perceived by society is lower than when compared with private hospitals. One fundamental difference is that the existing systems in government hospitals are different from those in private hospitals as well as there being different financing systems between government hospitals and private hospitals. This situation causes the service performance between public hospitals and private hospitals to be different. The results of this study are in line with previous research conducted by (Sharma and Kamra, 2013)

The results of this study are in line with the opinion from Qaisar, Rehman and Suffyan (2012) which states that organisational commitment among employees is an important aspect, as a result of which they perform better. Low commitment can

lead to poor service performance (Hamdi and Rajablu, 2012). Nurses are human resources who participate in colouring health services in hospitals. Therefore, nursing service has a contribution to this.

Relationship between characteristics of nurses and the quality of life of nurses' work

There is a significant correlation between nurses' characteristics with the quality of work life of nurses. This situation can be caused by the emotional and spiritual circumstances of the nurse that affect the pattern of nurse perception in performing hospital care services. Nursing work perceived as a burden is a source of stressor for the nurse, so that it impacts the pattern of life of nurses in the family and society. Changes in life patterns can be seen from the attitude and behaviour of nurses in everyday life at home.

Nursing behaviour patterns in running care services can easily make nurses being emotional. Changes in the work design are important for nurses to improve the quality of care that is provided for patients. According to previous research by Nursalam (2012), design of the nursing work can be done principally in the efficiency of the work, so that the nursing service process does not cause a stressor. The efficiency of job design can be done with work shift management for nurses, work-off systems and reward systems.

Motivation of nurses in running the service can be a factor that affects the state of nurses' life. Motivation is an important factor for nurses in providing patient care services. Previous research by Faraji Khiavi *et al.* (2015) states that the low motivation of nurses can cause low performance in the hospital.

Relationship of nurse characteristics with nurse performance

Based on the results of the analysis, it is found that the characteristic of nurses that most significantly affects the quality of working life is home dimension. Based on the results of the analysis it is found that the most significant nurse characteristics affecting burnout syndrome is self-actualisation

According to the results of the study, it is found that there is a relationship between job characteristics and the quality of life of nurses in hospitals. This situation can be caused by a variety of complex tasks imposed on the nurse and it is shown by the percentage of moderate to low category variation categories. The state of task variation can cause the nurses to experience fatigue in working, so that some aspects of the life needs of nurses is cyclically changed, such as time with family because, when they are in family time, they are still doing the task. This circumstance leads to changes in the quality of life of nurses.

Konstantinos and Christina (2008) concluded that the characteristic factors of nurses related to job satisfaction include the characteristics of the organisation, relationship with staff and patient care related to work stress. Collaboration between nurses and physicians is significantly related to work stress and a significant relation to job satisfaction. Collaboration between nurses' colleagues relates significantly to leadership and job satisfaction. Thus, leadership is related to nurse job satisfaction.

Konstantinos and Christina (2008) emphasise that the interaction aspects between individual circumstances (nurses), the environment of the nurse and the circumstances influence nurses' work. Individual circumstances include the characteristic state of the nurse, such as age, length of work, education, marital status and income. Conditions associated with the organisation include leadership, nurse workload and issues related to the nursing organisation. Environmental circumstances of the nurse include interaction between patient and nurse, interaction between nurse and doctor and nurse authority in providing care services.

Characteristics of nurses in burnout syndrome based on the results of research found that there is a significant relationship between job characteristics with burnout syndrome. This situation can be caused by a variety of tasks and the impact of the job as the source of stressor for nurses, which can be seen from the work of nurses which requires performing a comprehensive job regarding the patient. Job feedback has an impact on the emotional and spiritual state of the nurse, which can be reflected in the results of this study, indicating the low attitudes and commitment of nurses in running care services.

The nurse profession is central to the service centre given to the patient, so that the patient is concerned with the services provided

by the nurse to the patient. Nursalam (2014) mentions that the main role of nurse professionals is to provide nursing care to the patient (as the main object of study of nursing philosophy, which includes: 1) Paying attention to the individual in the context of the life and needs of the client; 2) Nurses use the nursing process to identify nursing problems, including physical, psychological, social and spiritual examinations; 3) Providing nursing care to clients (clients, families and communities) ranging from simple to complex.

The complex role of a nursing and the holistic demands of service lead to an emotional change in the nurse. This situation is supported by the results of research that show the low attitudes of nurses to the service, so that the nurse is experiencing a distressed perception in running the service in the hospital. Perception of pressure when working is the cause of burnout syndrome in nurses.

Characteristics of work with the performance of nurses

The results show that job characteristics significantly affect the performance of nurses. This situation can be caused by a heavy burden of duty for the nurse and high task variations, which lead to burnout conditions, thereby degrading the quality of nursing work. The quality of nursing work is decreased due to fatigue experienced by nurses.

The results of this study are in line with research by Khamisa, Peltzer and Oldenburg (2013) which states that the impact of burnout syndrome can affect the health of the nurses themselves. The circumstances of burnout can be caused by the long-lasting state of stress experienced by nurse, so that burnout syndrome occurs. Khamisa, Peltzer and Oldenburg (2013) mention that the cause of burnout syndrome in heavy workload has an impact of health itself.

Work-related stress can affect job satisfaction. The stressful state of work that lasts long will disrupt the health of nurses. Factors associated with the health condition of nurses include the stress experienced by nurses, which affects the nursing work condition in the provision of services to the patient. The nurse's stress condition leads to a decrease in job satisfaction, which affects the health condition of the nurse in general.

The relationship between nurse's quality of life and the performance of the nurse

Based on the results of the study it is found that nurses' quality of life significantly affects the performance of services. Circumstances can be caused by a nurse's work system, which always interacts with other professions and patients who change each day, causing the need for emotional skill in adapting to new circumstances. This situation causes pressure in the work so that it has an effect on the output of services provided by the nurse.

The nursing profession is a fundamental profession in patient care in hospitals, so the quality of service in the hospital rests on providing services provided by nurses to patients. Several previous researches conducted by Borhani et al. (2016) in Tehran, Iran, concluded that improving the nurses' quality of work life can improve the service performance provided by nurses to patients in the hospital. A study of Sirin and Sokmen (2015) in Turkey mentioned there are five indicators used in measuring the quality of work life of a nurse; they are work environment, relationship with manager, job condition, job perception and service support.

Horrigan *et al.* (2013) state that quality of work life reveals the importance of respect for humans in their work environment. Thus, the important role of quality of work life is to change the organisational climate in order to technically and humanely bring about a better quality of work life. Quality of work life formulates every policy process decided by a company in response to what their employees desire and expect.

The environmental factors of nurse work are important factors that influence the nurse's service to the patient. Kivimäki *et al.* (2008) state that the nurses' work environment factors include the physical environment in the workplace, home and various work rules that shape the atmosphere and working spirit of nurses that are implicated in performance. Meanwhile, Horrigan *et al.*, (2013) stated that positive nursing work quality can support high-quality patient care and contribute to the continuation of the healthcare system.

CONCLUSIONS

The quality of nursing work life model in accordance with the condition of Indonesian

nurses is influenced by organisational culture, nurse characteristics, job characteristics and efficient nursing life quality. It can be concluded that improving the performance of care services is more effective through the quality of nursing work life and in reducing the state of increased nursing work service among nurses is more effective through QNWL. The study found that the nurses' quality of life affects the incidence of increasing nursing work service, because their working scope involves interacting with other professions and the environment. The benefit of intervention in quality of nursing work life is to improve understanding in working, so that it can encourage the learning process. The typical Indonesian nurse QNWL model needs to be tested on other nurse work environments, so it can correct the possibility of imperfections in this research data. In addition, testing is required in the application of interventions to prevent burnout syndrome in nurses based on this model.

REFERENCES

Abdurrouf, M., Nursalam and Purwaningsih (2013) 'Islamic Caring Model on Increase Patient Satisfaction', *Jurnal Ners*, 8(1), pp. 153–164. doi: http://dx.doi.org/10.20473/jn.v8i1.3893.

Beh, L.-S. (2016) 'Job Stress and Coping Mechanisms among Nursing Staff in Public Health Services Leap-Han Loo', *International Journal of Academic Research in Business and Social Sciences*, 6(5), pp. 131–176. doi: 10.6007/IJARBSS/v6-i5/2164.

Borhani, F. *et al.* (2016) 'Assessment of Predictable Productivity of Nurses Working in Kerman University of Medical Sciences' Teaching Hospitals via the Dimensions of Quality of Work Life', *Global Journal of Health Science*, 8(10), p. 65. doi: 10.5539/gjhs.v8n10p65.

Cañadas-De la Fuente, G. A. *et al.* (2015) 'Risk factors and prevalence of burnout syndrome in the nursing profession', *International Journal of Nursing Studies*, 52(1), pp. 240–249. doi: 10.1016/j.ijnurstu.2014.07.001.

Dinas Kesehatan Propinsi Jawa Tengah (2012) 'Buku Profil Kesehatan Provinsi Jawa Tengah Tahun 2012', *Buku Profil Kesehatan Provinsi Jawa Tengah Tahun 2012*, 3511351(24), pp. 1–118.

Faraji Khiavi, F. *et al.* (2015) 'Effect of final evaluation on job motivation from the perspective of nurses in Ahvaz Hospitals in 2012.', *Journal of medicine and life*. Carol Davila - University Press, 8(Spec Iss 4), pp. 209–213. Available at: http://www.ncbi.nlm.nih.gov/pubmed/28316733 (Accessed: 18 November 2017).

Ghozali, I. (2014) *Partial least squares konsep, Metode dan Aplikasi Menggunakan Porgram Warp PLS 4.0*. Semarang: Badan Penerbit Universitas Diponegoro.

Gilbert Khosa, M. *et al.* (2014) 'Impact of Occupational Stress and Burnout on Employee Job Performance: A Study of Nurses in Rural Clinics of Bushbuckridge in Mpumalanga Province', *International journal of Innovative Research in Management ISSN*, 1(1), pp. 2319–6912.

Hamdi, S. and Rajablu, M. (2012) 'Effect of Supervisor-Subordinate Communication and Leadership Style on Organizational Commitment of Nurses in Health Care Setting', *International Journal of Business and Management*, 7(23), pp. 7–18. doi: 10.5539/ijbm.v7n23p7.

Horrigan, J. M. *et al.* (2013) 'Evaluating and Improving Nurses' Health and Quality of Work Life', *Workplace Health & Safety*. SAGE PublicationsSage CA: Los Angeles, CA, 61(4), pp. 173–181. doi: 10.1177/216507991306100405.

Khamisa, N. *et al.* (2015) 'Work related stress, burnout, job satisfaction and general health of nurses', *International Journal of Environmental Research and Public Health*, 12(1), pp. 652–666. doi: 10.3390/ijerph120100652.

Khamisa, N., Peltzer, K. and Oldenburg, B. (2013) 'Burnout in relation to specific contributing factors and health outcomes among nurses: A systematic review', *International Journal of Environmental Research and Public Health*, 10(6), pp. 2214–2240. doi: 10.3390/ijerph10062214.

Kivimäki, M. *et al.* (2008) 'Job strain and ischaemic disease: does the inclusion of older employees in the cohort dilute the

association? The WOLF Stockholm Study', *Journal of Epidemiology and Community Health*, 62(4), p. 372 LP-374. Available at: http://jech.bmj.com/content/62/4/372.abstract.

Konstantinos, N. and Christina, O. (2008) 'Factors Influencing Stress and Job Satisfaction on Nurses Working in Psychiatric Unit: A Research Review', *Heath Science Journal*, 4, pp. 183–195.

Manwatkar, S. and Mathew, S. (2016) 'A Study To Assess The Effectiveness Of Self Instructional Module Among Staff Nurses Regarding Stress Management In Selected Hospitals Of The City', *IOSR Journal of Nursing and Health Science*, 5(4), pp. 01–03. doi: 10.9790/1959-0504050103.

Mark, G. and Smith, A. P. (2012) 'Occupational stress, job characteristics, coping, and the mental health of nurses', *British Journal of Health Psychology*. Blackwell Publishing Ltd, 17(3), pp. 505–521. doi: 10.1111/j.2044-8287.2011.02051.x.

Momeni, B. *et al.* (2016) 'The relationship between the quality of work life and sleep in nurses at the intensive care units of teaching hospitals in Mazandaran, Iran', *mazujnms*. Department of Medical-Surgical Nursing, Nasibeh Nursing & Midwifery Faculty, Mazandaran University of Medical Sciences, Sari, Iran KW Intensive care unit (ICU) KW Nurse KW Quality of work life KW Sleep quality, 3(1), pp. 28–34. doi: 10.18869/acadpub.jnms.3.1.28.

Morsy, S. M. and Sabra, H. E. (2015) 'Relation Between Quality of Work Life and Nurses Job Satisfaction at Assiut University Hospitals', *Al-Azhar Assiut Medical Journal*, 13(1). Available at: http://www.aamj.eg.net/journals/pdf/2346.pdf (Accessed: 18 November 2017).

Nishitani, N., Sakakibara, H. and Akiyama, I. (2013) 'Short Sleeping Time and Job Stress in Japanese White-Collar Workers', *The Open Sleep Journal*, 6(1), pp. 104–109. doi: 10.2174/1874620901306010104.

Nursalam (2012) *Keperawatan Manajemen Aplikasi Dalam Praktek Keperawatan Profesional*. Jakarta: Salemba Medika.

Nursalam (2014) *Metode Penelitian Ilmu Keperawatan: Pendekatan Praktis*. 3rd edn. Jakarta: Salemba Medika.

de Paiva, L. C. *et al.* (2016) 'Risk factors identification for Burnout syndrome in nurses', *International Archives of Medicine*, pp. 1–7. doi: 10.3823/2199.

Papalia, D. E., Olds, S. W. and Feldman, R. D. (2007) *Human Development*. 10th edn. New York: McGraw Hill.

Qaisar, M. U., Rehman, M. S. and Suffyan, M. (2012) 'Exploring Effects of Organizational Commitment on Employee Performance : Implications for Human Resource Strategy', *Interdisciplinary Journal of Contemporary Reserach in Business*, 3(2000), pp. 248–255.

Sastroasmoro, S. and Ismael, S. (2011) *Dasar-dasar Metodologi Penelitian Klinis*. Jakarta: Binarupa Aksara.

Sharma, S. and Kamra, P. (2013) 'Patient Satisfaction with Nursing Care in Public and Private Hospitals', *Nursing and Midwifery Research Journal*, 9(3), p. 130.

Sirin, M. and Sokmen, S. M. (2015) 'Quality of Nursing Work Life Scale: The Psychometric Evaluation of the Turkish Version', *International Journal of Caring Sciences*, 8(3), pp. 543–554. Available at: www.internationaljournalofcaringsciences.org (Accessed: 17 November 2017).

Suharti, N. and Daulima, N. (2013) *Burnout dengan Kinerja Perawat di Rumah Sakit Metropolitan Medical Centre Jakarta*. Universitas Indonesia.

Suresh, D. (2013) *Quality of Nursing Work Life among nurses working in selected government and private hospitals in Thiruvananthapuram*. Sree Chitra Tirunal Institute for Medical Sciences & Technology. Available at: http://dspace.sctimst.ac.in/jspui/bitstream/123456789/2265/1/6282.pdf.

Thulth, A. S. and Sayej, S. (2015) 'Selected organizational factors affecting performance of professional nurses in North West Bank Governmental Hospitals', 6(7), pp. 100–110.

THE DEVELOPMENT OF A SIX SIGMA–BASED ULCUS DECUBITUS PREVENTION MODEL TO RESPOND TO ADVERSE EVENTS

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ABSTRACT

Introduction: Based on the number of incidences of Ulcus Decubitus in 2015 which was 2.4 ‰ and 1.59 ‰ in 2016, the incidences of Ulcus Decubitus is an indicator of patient safety. In one of the public hospitals in Surabaya, it showed that the achievement of a Ulcus Decubitus indicator had not been reached yet (the standard is 1.5 ‰ per year). One of the efforts that can be done to prevent the occurrence of ulcus decubitus is by way of Six Sigma-based ulcus decubitus prevention. **Methods:** The design of this research was an explanatory research study using a cross-sectional approach. The research respondents were nurses at Inpatient Wards (4 Rooms); 57 nurses via the Purposive Sampling technique. The research data was analysed with Partial Least Square (PLS) **Results:** Individual factors (Path Coefficient 0,200 t: 6,580), organisational factors (Path Coefficient 0,373 t: 9,278) and management factors (Path Coefficient 0.099 t: 2.184) are all significantly correlated with the Six Sigma-based Ulcus decubitus prevention. **Conclusions:** Individual, Organisational and Management factors are important factors in the Six Sigma-based Ulcus Decubitus prevention model. It needs advanced research to find out how much the influence of Six Sigma-based Ulcus Decubitus prevention implementation will decrease the incidences of Ulcus Decubitus

Keywords: adverse events, prevention, six sigma, ulcus decubitus

INTRODUCTION

A hospital is an organisation that provides services to patients that should pay attention to the quality of the servicer, especially about the issue of patient safety (Iskandar, Maksum and Nafisah, 2014). Therefore patient safety is a top priority in relation to providing services to patients related to the quality issue and hospital image (Christoher, SK, David, A, Spahlinger, MD dan John, 2009). The incidences of ulcus decubitus patients is an indicator of patient safety in nursing care at the clinic (Nenny Puji Lestari, Deni Kurniadi Sunjaya and Avip Syaefullah, 2013). If the patient's safety indicator has not reached the standard (1.5 % per year), then it will affect the quality of nursing services (KARS, 2012). As a result of the frequent occurrence of ulcus decubitus, the patient is at risk of Adverse Events (Christoher, SK, David, A, Spahlinger, MD dan John, 2009). The problem is in relation to the provision of nursing care in treated patients is the unoptimised care focusing on the prevention of ulcus decubitus (Laureani, Brady and Antony, 2013). One of the efforts that can be done to prevent the occurrence of ulcus decubitus is by Six Sigma-based ulcus decubitus prevention. Diversity and service routine in the Hospital, if not managed properly, can result in Adverse Events (KTD) (Austin, 2013).

The Institute of Medicine (IOM) in 1999 published a report presenting research results in Utah and Colorado, as well as New York. In Utah and Colorado there were found to be Adverse Events at 2.9% in which 6.6% of them led to death (Mulyadi, 2010). While in New York, the number of Adverse Events was 3.7% with 13.6% mortality. The number of deaths due to Adverse Events occurred within Inpatients (33.6 million per year) in the United States ranges from 44,000-98,000 per year (Chassin, MR, Mayer, C dan Nether, 2015). Based on the 2004 World Health Organisation (WHO) publication collecting hospital research figures in various countries: America, England, Denmark and Australia, Adverse Events were found to range from 3.2 to 16.6% (Churchman, 1957). The Institute of Medicine (IOM) about the 21st-century new health system stated that in the provision of health services, patients should be safe from negligence caused by the service system (Buchbinder, BS dan Shanks, 2014). Today, the increasing complexity of health has contributed to the problem of negligence in service (Hasibuan, 2014).

Nursing care service is one part of the services provided in the Service Hospital (Kurniadi, 2013). Quality nursing care is the desire of every individual and society who receive the health care services (Cipto, 2010). Nurses as service providers need to know the standard measurement of services. The

measurement of one of the clinical indicators of nursing quality is Ulcus Decubitus, which is coordinated by the Patient Safety Team (Graban, 2011). One of the clinical indicators of nursing quality related to patient safety - namely Ulcus Decubitus – is still a problem because the achievement figure has not yet matched the standard (≤1,5 ‰) found in 2014-2016 (Hamming, M dan Nurnajamuddin, 2014).

The currently used Ulcus Decubitus prevention system is in the nursing process but it is still incomplete (Adisasmito, 2007). The assessment is still not focused on Ulcus Decubitus prevention. The nursing diagnoses and the nursing plans are not yet standardised, the implementation is still not optimal while monitoring and evaluations have not been done; hence there is no standard system for Ulcus Decubitus prevention (Darmawan, 2014). The nursing care system in Indonesia is still not widely published because the quality of the system is not well managed. Therefore the results of care quality have not met the expected standards yet (Komalawati; Veronica, 2010). It is necessary to conduct this research expecting that the results of this study can be useful to improve the quality of Ulcus Decubitus prevention.

MATERIALS AND METHODS

The design of this research is a cross-sectional explanatory research study. The population to raise the strategic issue was sought by providing questionnaires to the nurses of an Inpatient Ward in one of the public hospitals in Surabaya, including four rooms, selected by the purposive sampling method which involved 57 managing nurses. The data was collected using a questionnaire and observation. The analysis was performed using Partial Least Square (PLS). The results of PLS and the strategic issues were then raised into FGDs with the aim of developing a module of Six Sigma-based prevention. The ethical examination was conducted on 16 March 2017 based on the ethical statement No 073/11/KOM.ETIK/2017.

RESULTS

The majority of the respondents are in adulthood, i.e. 26-30 years old (47.4%), with a working period as a supervisor / Team Chief for less than one year (52.6%), while for the last education stage undertaken by most of the respondents is a Nursing Diploma of Nursing Education (73.7%). Most of their employment status was permanent (57.9%) (Table 1).

Table 1. Respondent characteristics (n=57)

Respondent Category	n	%
Age		
20-25 Years	8	14.0
26-30 Years	27	47.4
31-35 Years	9	15.8
36-40 Years	1	1.8
> 40Years	12	21.1
Length of Supervisor position		
< 1Years	30	52.6
1-5 Years	6	10.5
5-10 Years	8	14.0
10-15 Years	2	3.5
> 15 Years	11	19.3
Last Education		
Nursing Vocational School	0	0
Nursing Diploma	42	73.7
Bachelor Degree of Nursing	15	26.3
Employment Status		
Permanent Employee	33	57,9
Contract Employee	24	42,1

Data of the Individual, Organisational, and Management Factors

The majority of the individual factors are at a good level (77.2%). This is because the majority of the respondents have good knowledge, skills and attitude.

Major organizational factors are in good level (70.2%) because respondents more than half responded to the environment/ provision of good infrastructure, most respondents provided good feedback, and the decision-making majority of the respondents good. Next, the majority management factor was at a good level (75.4%) because most of the respondents answered well in relation to patient safety culture and good organisational culture.

Results of PLS (Partial Least Square Output)

Analysis Results of Model Examination (Outer Model)

The Pathway Coefficient is comprehensively presented in Table 3. Individual factors include skill and attitude significantly influence Six Sigma-based Ulcus Decubitus prevention. Individual knowledge

Table 2. Individual Factors, Organisational Factor and Management Factor in the Development of a Ulcus Decubitus Model based on Six Sigma on Unexpected Event (KTD) in Inpatient Room (n=57)

Factors	n	%
Individual Factor		
Poor	0	0
Fair	13	22.8
Good	44	77.2
Organizational Factor		
Poor	2	3.5
Fair	15	26.3
Good	40	70.2
Management Factor		
Poor	0	0
Fair	14	24.6
Good	42	75.4

factors have no significant effect on Six Sigma-based Ulcus Decubitus prevention. Organisation and management factors have a significant effect on Six Sigma-based Ulcus Decubitus prevention because their outer loading numbers are more than 0.5.

Analysis Results of Reliability Test (Composite Reliability)

Composite reliability tests help to find the reliability value of an indicator of a construct. A constructor variable is said to satisfy the reliability test if it has a composite reliability value > 0.7. All of the variables (individual factor, organisational factor, management factor and six sigma-based ulcus decubitus prevention) have a composite reliability > 0.7 (Table 4).

Inner Model

The inner model evaluation aims to determine the magnitude of influence or causality relationships among the variables in the study. From the table, there is an influence from the individual factors (skills, attitudes) to the prevention of ulcus decubitus based on the six sigma method. The results of Partial Least Square analysis got a statistical t value of 6,580. Also, there is the influence of the organisational factors (environment, feedback, decision making) on the prevention of ulcus decubitus based on the Six Sigma method indicated by the results of the Partial Least Square analysis as it obtained a statistical t value of 9,278. There is an influence from the management factor (organisational culture, patient safety culture) on the the prevention of Six Sigma-based Ulcus Decubitus. The result of the Partial Least Square analysis got a statistic t value of 2.184 (Table 5).

DISCUSSION

The Effects of Individual Factor on Six Sigma-based Ulcus Decubitus prevention to Inpatient Ward of Hospital

The results of this study found that individual factors affect Six Sigma-based Ulcus Decubitus prevention. The sub-variables of the individual factors consist of the skill, knowledge and attitude of a nurse. In this case, they are related to the prevention of Ulcus Decubitus which is conducted by the nurse including assessments, planning, implement-tation, and evaluation (Ardana, 2012).

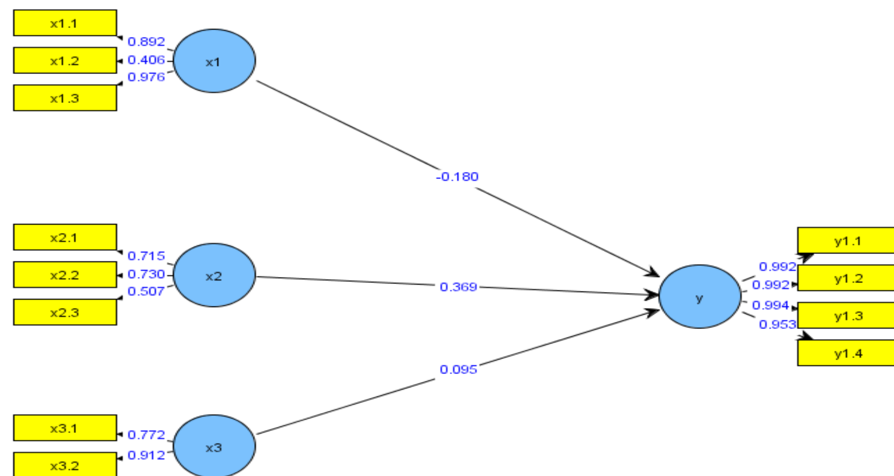

Figure 1. Analysis of the Test of Six Sigma-based Ulcus Decubitus Prevention Model

Table 3. Recapitulation of the results of the hypothesis test of the development of a prevention model for Six Sigma based ulcers and Unexpected Events (KTD) in the Inpatient Room

Variables	Indicators	Outer Loading	Remark
Individual factor	X1.1 Skill	0.892	Significant
	X1.2 Knowledge	0.406	Not Significant
	X1.3 Attitude	0,976	Significant
Organisational factor	X2.1 Environment	0.715	Significant
	X2.2 Feedback	0.730	Significant
	X2.3 Decision making	0.507	Significant
Management factor	X3.1 Patient safety culture	0.772	Significant
	X3.2 Organisation culture	0.912	Significant
Six sigma-based Ulcus Decubitus prevention model	Y.1 Assessment	0.992	Significant
	Y.2 Planning	0.992	Significant
	Y.3 Implementation	0.994	Significant
	Y.4 Evaluation	0.953	Significant

Table 4. Variable Reliability Results of individual, organisational, and management factors toward *Six Sigma*-based *Ulcus Decubitus* prevention based on Six Sigma on Unexpected Events (KTD) in the Inpatient Room

Variable	Composite Reliability	Remark
Individual factor	0.947	Valid
Organisational factor	0.722	Valid
Management factor	0.833	Valid
Six Sigma-based Ulcus decubitus prevention	0.991	Valid

Table 5. Hypothesis value of the variables of the individual factors, organisational factors and management factor on the prevention of Ulcus Decubitus based on Six Sigma on Unexpected Event (KTD) in the Inpatient Room

Variable	Deviation standard	T Statistic	Remark
Individual factor	0.030	6,580	Significant
Organisational factor	0.040	9,278	Significant
Management factor	0.046	2,184	Significant

Knowledge is the result of understanding, and it occurs after sensing the object (Notoadmodjo, 2013). After a person or object has a judgment or opinion on what is known, the next process is expected to be to implement or practice what is understood (Martini, 2009). Through action and learning, one will gain trust and attitude towards something which in turn will affect behaviour (Umar, 2001).

The results of this study indicate that skills, knowledge and attitudes significantly influence Six Sigma-based Ulcus Decubitus prevention. Knowledge has two main functions, first as a background in analysing something, perceiving and interpreting it and then proceeding with a necessary action decision. The second role of knowledge in taking the necessary actions to be the background in articulating some options for possible actions, choosing one of the several possibilities and implementing the choices (Fursule, NV; Bansod, 2012). Knowledge is needed as a support in growing confidence and attitude as well as behaviour every day, so it can be said that knowledge is a fact that supports someone’s attitude and actions (Notoadmodjo, 2013).

The results of the study indicate that more than 50% of nurses have skills, knowledge and a good attitude but they have undertaken less precautionary actions against Ulcus Decubitus. This is due to the low intention/motivation to work on patient care in Ulcus Decubitus prevention. The regulation/ nursing care standard of Ulcus Decubitus

prevention has not been adjusted to the current condition, and the monitoring-evaluation of Ulcus Decubitus prevention effort has not been optimally conducted.

The Effects of the Organisational Factor on Six Sigma-based Ulcus Decubitus prevention in the Inpatient Ward

The organisational factor has sub-variables such as environment, feedback and decision-making. From the results of the research, based on PLS analysis, it obtained a T value statistic of 9,278.This result indicates that there is a significant influence between the variables of the organisational factor and Six Sigma-based Ulcus Decubitus prevention.

A positive work environment can reduce fatigue, attract employees and maintain work quality for the nurses (Wuryanto, 2010). The working environment consists of medical equipment and the necessary infrastructures to achieve the goal of working in a hospital (Jiwanto, A., 2015).

Feedback is one of the important things in improving the performance of a nurse (DEPKES RI, 2008). The complexity of the responsibilities to be performed is very important for the nurse whenever there is an event in relation to the patient's safety so that a similar event will not happen again (Asmuji, 2014).

Decision-making is a decision-making process in certain situations and is the main key for the health professionals in service delivery which affects various outcomes (Ammenwertha, Elske; Kutscha, Ulrike; Kutscha, Ansgar; Mahler, Cornelia; Eichstädter, Ronal; Hauxa, 2001). The results of the study on nurses states that more than 50% of the environmental factors (facilities/air mattress), for Ulcus Decubitus prevention have not matched the patients' needs. More than 50% of the nurses stated that feedback on the success rate on the Ulcus Decubitus prevention system currently has not been re-informed. This is due to the lack of existing information systems.

The Effects of Management Factors on Six Sigma-based Ulcus Decubitus prevention

Management factors have sub-variables such as patient safety culture and organisational culture. From the results of this research, based on the PLS analysis, the statistical T value was 2,184. The result indicates that there is a significant influence between the variables of the management factor and Six Sigma-based Ulcus Decubitus prevention.

Total safety culture mentions that there are 3 factor groups that affect patient safety culture: personal factors that tend to be from people who work in the hospital organisation, consisting of knowledge, attitude, motivation, competence and personality; organisational behavior factors that are the conditions of the work environment measured in terms of the the organisation of the health services in general, consisting of leadership, situation alertness, communication, teamwork, stress, fatigue, team leadership, and decision making; environment factors are supporters of the service processes in health organisations consisting of equipments, tools, machinery, cleanliness, and techniques (Furfari, 2010).

The results of this study states that most of the patient safety culture factors are sufficient, but it lacks the implementation of Ulcus Decubitus prevention. This is due to the lack of information about patient safety, especially about the incidence of Ulcus Decubitus which is a type of Adverse Event (KTD).

CONCLUSIONS

Individual factors (skills, knowledge, attitudes), organisational factors (environment, feedback, decision making) and management factors (patient safety culture, organisational culture) have an influence on Six Sigma-based Ulcus Decubitus prevention. It needs advanced research to find out how much the influence of Six Sigma-based Ulcus Decubitus prevention implementation will decrease the incidences of Ulcus Decubitus so that the achievement standard/indicator of Ulcus Decubitus cases can be achieved.

REFERENCES

Adisasmito, W. (2007) *Sistem Manajemen Lingkungan Rumah Sakit*. Jakarta: Raja Grafindo Persada.

Ammenwertha, Elske; Kutscha, Ulrike; Kutscha, Ansgar; Mahler, Cornelia; Eichstädter, Ronal; Hauxa, R. (2001) 'Nursing process documentation systems in clinical routine—prerequisites and experiences',

International Journal of Medical Informatics, 64, pp. 187–200. doi: https://doi.org/10.1016/S1386-5056 (01) 00216-7.

Ardana, K. (2012) *Manajemen Sumber Daya Manusia, Ed 1*. Jogyakarta: Graha Ilmu.

Asmuji (2014) *Manjemen Keperawatan: Konsep dan Aplikasi,*. Jakarta: Ar-Ruzz Media.

Austin, M. (2013) 'Safety in Numbers: The Development of Leapfrog's Composite Patient Safety Score for U.S. Hospitals. Safety in Numbers.', *The Johns Hopkins University School of Medicine*, 9, p. 750.

Buchbinder, BS dan Shanks, H. (2014) *Buku Ajar ManajemenPelayanan Kesehatan*. Jakarta: EGC.

Chassin, MR, Mayer, C dan Nether, K. (2015) 'Improving Hand Hygiene at Eight Hospitals in the United States by Targeting Specific Causes of Noncompliance', *The Joint Commission Journal on Quality and Patient Safety*. Elsevier, 41(1), pp. 4–12. doi: 10.1016/S1553-7250(15)41002-5.

Christoher, SK, David, A, Spahlinger, MD dan John, E. . (2009) 'Creating Value in Health Care : The Case for Lean Thinking.', *JCOM*, 16(12).

Cipto (2010) *Jaminan Mutu Layanan Kesehatan, Dasar-Dasar Pengertian dan Penerapan*. Jakarta: EGC.

Darmawan, D. (2014) *Metode Penelitian Kuantitatif*. Bandung: Remaja Rosdakarya.

DEPKES RI (2008) *Panduan Nasional Keselamatan Pasien Rumah Sakit (Patient Safety)*. Edited by 2. Jakarta: Bakti Husada.

Furfari, K. (2010) *The Lean hospital: What does it mean?* The university of Colorado Hospital.

Fursule, NV; Bansod, S. (2012) 'Understanding the Benefits and Limitations of Six Sigma Methodology.', *International Journal of Scientific and Research Publications*, 2(1).

Graban, M. (2011) *Lean Hospital*. Boca Raton: CRC Press.

Haming, M dan Nurnajamuddin, M. (2014) *Manajemen Produksi Modern, Operasi Manufaktur Faktor dan Jasa*. 3rd edn. Jakarta: Bumi Aksara.

Hasibuan, S. (2014) *Manajemen Sumber Daya Manusia,*. Jakarta: Bumi Aksara.

Iskandar, H., Maksum, H. and Nafisah, N. (2014) 'Faktor Penyebab Penurunan Pelaporan Insiden Keselamatan Pasien Rumah Sakit', *Jurnal Kedokteran Brawijaya*, 28(1), pp. 72–77. doi: 10.21776/ub.jkb.2014.028.01.27.

Jiwanto, A., E. (2015) *Standarisasi Proses Layanan Terkait Keselamatan Pasien Melalui Pendekatan Lean Hospital di Rumah Sakit Petrokimia Gresik*. Universitas Airlangga.

KARS (2012) *Panduan Penyusunan Dokumen Akreditasi, Komisi Akreditasi Rumah Sakit.* Jakarta.

Komalawati; Veronica (2010) *Community dan Patient Safety Dalam Perspektif Hukum Kesehatan*. Jakarta.

Kurniadi, A. (2013) *Manajemen Keperawatan dan Prospektifnya, Teori, Konsep dan Aplikasi*. Jakarta: Badan Penerbit FKUI.

Laureani, A., Brady, M. and Antony, J. (2013) 'Applications of Lean Six Sigma in an Irish hospital', *Leadership in Health Services*, 26(4), pp. 322–337. doi: 10.1108/LHS-01-2012-0002.

Mulyadi (2010) *Sistem Perencanaan dan Pengendalian Manajemen*. Jakarta: Salemba Empat.

Nenny Puji Lestari, Deni Kurniadi Sunjaya and Avip Syaefullah (2013) 'Konsep Manajemen Keselamatan Pasien Berbasis Program Di Rsud Kapuas Provinsi Kalimantan Tengah'. Available at: http://repository.unpad.ac.id/18193/ (Accessed: 14 November 2017).

Notoadmodjo (2013) *Promosi Kesehatan dan Perilaku Kesehatan*. Jakarta: Rineka Cipta.

Wuryanto, E. (2010) *Hubungan Lingkungan Kerja dan Karakteristik Individu dengan Kepuasan Kerja Perawat di Rumah Sakit Umum Daerah Tugurejo Semarang*. Universitas Indonesia.

THE ELDERLY'S SATISFACTION WITH THE SERVICE QUALITY OF A COMMUNITY GERIATRIC HEALTH PROGRAMME IN INDONESIA: A CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction: The achievement of the geriatric health programme is still under a number of government targets and the research about the satisfaction of elderly in contributing to this program still limited. This study aims to identify the correlation between the service quality of a geriatric health programme in the community with the satisfaction of older adults. **Methods:** The research design was cross-sectional and involved 277 elderly people as the respondents. The service quality was measured using a service quality (SERVQUAL) questionnaire with three different sub-variables of input, process and outcome. The elderly people's satisfaction was examined using several parameters including reliability, assurance, tangibles, empathy and responsiveness (RATER). The data obtained from the questionnaires was analysed using the Spearman Rho test with a significance level of <0.05 to determine the correlation between the variables. **Results:** Good service quality provided satisfaction among the elderly. The Spearman Rho test result for input quality was p = 0.000 with a correlation coefficient of 0.705, while the test result for process quality was p = 0.000 with a correlation coefficient of 0.750. The outcome quality was p = 0.000 with a correlation coefficient of 0.766. The results showed that there is a relationship between the independent and dependent variables. **Conclusions:** Good service quality regarding the input, process and output of the service can enhance the satisfaction levels of the elderly. This study can be referred to as a parameter and evaluation for the PHC to maintain and improve the service quality standards for the elderly.

Key words: community, elderly, geriatric health programme, satisfaction, service quality

INTRODUCTION

Indonesia has a programme for the elderly in the community named *Pos Layanan Terpadu Lansia* or an Integrated Health Service Post for the Elderly (IHSPE). This programme aims to improve elderly people's quality of life and well-being. The service quality of IHSPE is significantly important in order to enhance the satisfaction of the elderly; higher service quality will lead to higher satisfaction levels perceived by the elderly.

According to *Badan Penelitian dan Pengembangan Kesehatan* (BPPK) (2012), the number of public health centres (PHCs) that have implemented the comprehensive geriatric health programme encompassing promotive, preventive, curative and rehabilitative care from the level of family and society to the secondary or advanced level was only 42.3%. The low number of PHCs implementing the programme was caused by several problems including the unavailability of standardised human resources, facilities, documentation and the reporting system of the geriatric health service as well as the multi-programme coordination, which was not been optimal for maintaining the health of elderly people (Permenkes Nomor 2, 2016).

In 2015, the coverage of the geriatric health programme in the Central Java Province was only 52.83%, with the lowest prevalence in Cilacap Regency reaching only 9.21%, which is far from the minimum service standard target of 60% (Dinas Kesehatan Provinsi Jawa Tengah, 2016). The coverage of the programme in Surabaya City was 68.31% in 2015 out of a total population of 219,164 elderly people (Dinas Kesehatan Kota Surabaya, 2016). The low results were caused by several factors including facilities, type of activities, human resources and the distance from the elderly individuals' houses to the IHSPE location (Herdining WP 2013).

Customer satisfaction is a factor that strongly determines the service marketing; otherwise, customer dissatisfaction will lead to low service quality standards in the future (Kotler & Kevin Lane K, 2009). A study conducted in Rembang, Central Java Province, in 2015 showed that 77.6% of the respondents were dissatisfied with the IHSPE programme, which was provided by the PHC (Rizqiana A, 2015). In Jember, the dissatisfaction prevalence was 34.38%, while in Surabaya it was 46.20% (Dony S, 2013; Uswatun H, 2012).

An initial study conducted by researchers showed that Pucang Sewu had 5,673 elderly, who were divided into 13 IHSPE programmes. However, the achievement of the geriatric health programme from the PHC was

3,030 people or only 52.22% of the total population of the elderly, which is still under the minimum service standard targeted by Surabaya City Municipality, which reached 70%.

The interviews were performed with elderly people involving questions around the service quality of the three IHSPEs, including the IHSPEs of Bratang, Kertajaya, and Pucang, in which 8 of 10 respondents expressed their dissatisfaction with the activities of the IHSPE. The dissatisfaction levels were caused by the activities, which were held in a narrow place, with limited seats and parking. On the other hand, the health care provider from the PHC only attended once a month, with the rest of the activities being handled by the cadres. Of the total number of elderly people registered in the IHSPE, the attendance rate was only 60-70, which means that 30-40% of the elderly did not attend the IHSPE's activities.

Satisfaction is a feeling of pleasure or displeasure that comes from a comparison between the impression of a performance or the results of a service and the expectation of it. If the impression is lower than the expectation, then the clients will be dissatisfied, which leads to them becoming reluctant to revisit the service and to seek another service provider. In contrast, if the impression meets their expectation or is higher than it, then the clients will be satisfied or even strongly satisfied, which tends to attract the clients' loyalty (Lupiyopadi, 2009). In the case of the service quality of the IHSPE, if the IHSPE ignores its clients' level of satisfaction, the dissatisfaction will increase, and their attendance rate will decrease. According to *Pusat Data dan Informasi Kemenkes RI* (2013), 52.12% of the elderly on average complain about their health condition, comprising of 50.22% men and 53.74% women. Based on the data, the PHC as a health care provider on the first level is expected to provide high-quality health services to the elderly, using the IHSPE to maintain independence, productivity and health among the elderly.

According to the data, the researchers are interested in studying the relationship between elderly people's satisfaction levels and the service quality of the IHSPE in the Pucangsewu District, Surabaya.

MATERIALS AND METHODS

The study used a cross-sectional design with the cluster sampling method. A total of 1144 elderly people from the 13 IHSPEs of the Pucangsewu District, Surabaya, were randomly selected. 10 IHSPEs with a total membership number of 887 elderly, were then recalculated to 277 elderly individuals as the sample. The data was analysed using Rank Spearman, with a significance level of $p < 0.05$.

The service quality was calculated from the reduction of the expectation value average to the realisation value average. The level of expectation was measured using a four-point Likert scale, from 1 ("not important") to 4 ("very important"), while the realisation was measured using a Likert scale from 1 ("very bad") to 4 ("very good"). A final score of 1-3 means "excellent", 0 means "fair" and (-1)-(-3) means "poor". The satisfaction level was calculated from the percentage of the total score to the maximum score. A percentage of 80-100% means "high", 60-79% means "moderate" and <60% means "low". The score was measured using a four-point Likert scale, from 1 ("very dissatisfied") to 4 ("very satisfied").

The ethical clearance of this study has been assessed and verified by the Ethical Committee of the Faculty of Public Health Universitas Airlangga with approval letter No. 263-KEPK. The ethical principles applied in this study include the principles of beneficence, respect for human dignity, right to justice and right to freedom.

RESULTS

A total of 215 respondents (77.6%) rated the input as excellent, and 232 respondents (83.3%) also rated the process as excellent (Table 1). A total of 193 people (69.7%) perceived a moderate level of satisfaction for the dimension of reliability and 184 people (66.4%) also perceived the level of satisfaction with responsiveness as being moderate (Table 2).

Based on *Spearman's rho* test for the quality of input, the p-value = 0.000 (<0.05) and r = 0.705, which means that H1 is accepted, in which there is a strong correlation between the quality of input and the satisfaction of the elderly. For the quality of process, the p-value =

Table 1. Cross tabulation between service quality of IHSPE and satisfaction level of elderly

Sub Variable	**Service Quality**			**Satisfaction Level**			**Total (%)**
	Category	**Frequency**	**Percentage**	**Category**	**Frequency**	**Percentage**	
Input	Excellent	215	77.6	High	83	30.0	100.0
				Moderate	132	47.7	
				Low	0	0	
	Fair	36	13.0	High	3	1.1	
				Moderate	33	11.9	
				Low	0	0	
	Poor	26	9.4	High	0	0	
				Moderate	0	0	
				Low	26	9.4	
Process	Excellent	232	83.8	High	85	30.7	100.0
				Moderate	147	53.1	
				Low	0	0	
	Fair	19	6.9	High	1	0.4	
				Moderate	18	6.5	
				Low	0	0	
	Poor	26	9.4	High	0	0	
				Moderate	0	0	
				Low	26	9.4	
Outcome	Excellent	136	49.1	High	80	28.9	100.0
				Moderate	56	20.2	
				Low	0	0	
	Fair	115	41.5	High	6	2.2	
				Moderate	109	39.4	
				Low	0	0	
	Poor	26	9.4	High	0	0	
				Moderate	0	0	
				Low	26	9.4	

0.000 (<0.05) and r = 0.750, which means that H1 was accepted, in which there was a strong correlation between the quality of the process and the satisfaction of the elderly. Meanwhile, the quality of the outcome had p-value = 0.000 (<0.05) and r = 0.766, which means that H1 was accepted, in which there was a strong correlation between the quality of the outcome and the satisfaction of the elderly (table 3).

DISCUSSION

According to the study, there is a strong correlation between the quality of process and the satisfaction of the elderly. In the quality service process, 147 respondents (53.1%) perceived that the process quality was excellent, with a fair level of satisfaction. The service quality process of the IHSPE is a process of interaction between the elderly and the PHC's officers, as well as with the cadres by providing services according to their professional knowledge, considering the values believed by each elderly person. The assessment of the quality process was based on the first question in the questionnaire regarding patient safety, in which the officers always disposed of the used needles in the safety box prepared by the officers after blood sugar and cholesterol checking, so that it would not cause any harm to the elderly after the check-up.

Question number 2 and the satisfaction questionnaire question numbers 3 and 4 were about the dimensions of reliability and assurance, while question number 5 was about the information delivery from the cadres and the officers when conducting health education and promotion activities. The elderly are always involved in determining the theme for the promotion by their needs; thus, they will have aims when coming to the programme. The point of question number 3 in the process quality questionnaire and number 2 in the satisfaction

Table 2. Frequency distribution based on satisfaction dimension of the elderly in the IHSPE

Quality Dimension	Satisfaction Level					
	Low	%	Moderate	%	High	%
Reliability	11	4.0	193	69.7	73	26.4
Assurance	28	10.1	151	54.5	98	35.4
Tangible	32	11.6	141	50.9	104	37.5
Empathy	31	11.2	153	55.2	93	33.6
Responsiveness	18	6.5	184	66.4	75	27.1

Table 3. Data tabulation of correlation between service quality and elderly's satisfaction

Quality	R	Correlation Strength	p	Results
Input	0.705	Strong	0.000	Significant
Process	0.750	Strong	0.000	Significant
Outcome	0.766	Strong	0.000	Significant

questionnaire in the assurance dimension relates to the honesty of officers in conveying the check-up results to the elderly people and the satisfaction questionnaire in the responsiveness dimension was an indicator of the excellent service in the service process of the IHSPE. The results of the check-up were always conveyed honestly to the elderly about their health condition and further examination if necessary, either in the PHC or hospital. The officers also explained what kind of services would be could be conducted in the hospital for the elderly so that they would understand the limitations of the service and would not have inflated expectations of the health services in the IHSPE. The quality of input question number 5 was about the manners and appearance of the cadres of the IHSPE programmes; all of the health cadres always show good manners and communicate well with the elderly in the IHSPE programme.

The results of this study correspond with those of the study conducted by Desi Suci (2014) in Jakarta, which showed that the majority of the respondents stated that the cadres were well-behaved in the IHSPE programmes, paid attention to the elderly, were friendly, and invited the elderly to communicate with them. These results show that the elderly were satisfied with the performance of the IHSPE cadres.

Parasuraman in Nursalam (2015) described the assurance dimension in the concept of the service quality RATER, whereby a service provider organisation guarantees that the service quality will provide satisfaction and high work commitment in accordance with the form of the work integration, work ethic, and work culture according to the vision and mission of the organisation in order to convince people about their service and performance.

The quality of process questionnaire number 3 and satisfaction questionnaire of assurance dimension number 3 and reliability dimension number 5 contained the accuracey and skill of the officers in providing IHSPE services, which means that the officers delivered satisfaction to the elderly by showing their skills in medical examination and treatment by providing the appropriate prescription and drugs to the elderly in accordance with the results of the examination so the elderly perceived the officers as having given a good performance. Question number 7 in the quality questionnaire and satisfaction questionnaire in assurance dimension number 4 was about the disadvantages arising from the IHSPE towards the elderly. During the IHSPE activities, the elderly have never felt disadvantaged, either morally or materially. Officers were always well-behaved when interacting with the elderly, such as using polite word choices and making no distinction regarding grade, class, religion, or ethnicity so that the elderly people felt the officers respected them according to the question number 5 and 6 in the service quality process questionnaire.

The results correspond with those of Donnabedian in Nursalam (2015). The aims of ISO 9001: 2000 ensures the suitability of the service process about the requirements that are specified by the customer and agency service

providers to maintain the principles of ethics; namely beneficence, non-maleficence, respect and justice in providing the services.

In the quality of the process, 26 respondents (9.4%) answered that the process was poor with low satisfaction. The low rating was a result of the services received being lower than the expectation. The elderly were not satisfied regarding the empathy dimension and their complaints about health problems to the cadre and their solution, as reported in the questionnaire of the quality of process number 8 and 9, as well as the questionnaire of empathy satisfaction numbers 1, 3, 4, and 5. These problems happened because of the limited number of officers who have to serve all of the elderly people in the location. Some of the elderly people did not have the opportunity to consult about their health problems. These results correspond with those in the study conducted by Anggri (2011), in which the respondents stated that they were less satisfied with the level of empathy performance and the public service because the cadres often did not pay attention to the elderly person's needs and did administrative work instead. Another study, conducted by Wulansari (2015), stated that the good service and patience of the cadres in dealing with the elderly were two of the factors leading to high satisfaction levels among the elderly in the IHSPE programmes, as they perceived that the benefits of the IHSPE programme that can help to maintain their health condition.

The gap in SERVQUAL theory, according to Nursalam (2015), is a gap between the quality specifications and service delivery, whereby the service standard and delivery are in good order, but the front-line staff have not received specific training on the delivery of the services, which has caused the gap. It prevented the service from meeting the standards set by the service provider.

Some organisations have to adapt to the satisfaction preference of their clients as well as to the best effort that they can provide (Nursalam,2015). In providing the services, the IHSPE must correspond with the job commitment by performing attractive, convincing and trustworthy behaviour as well as the actualisation and reflection of the job performance. It can be achieved including competence in the form of the skills and knowledge possessed by the employees to perform the services; courtesy, including hospitality, the attention and attitude of the employee and then credibility encompassing matters related to the trust towards the company, such as reputation, achievements and any other matters.

Based on demographic data, nearly half of the elderly people's education level was primary school, amounting to 133 respondents (48.0%). The education level of the elderly could affect quality perception in the information transmitted by the officers which could have an impact on the level of satisfaction towards the information received by the elderly. The results were in line with the study conducted by Kristina B W (2015), who found that education level could affect the level of the understanding of the respondents about the information received by them. With higher education, the elderly could obtain more information, both from other people and from the media. If they obtained more information, they would also obtain more knowledge. A high level of education also makes it easier for them to access information, so it would improve their competence in performing tasks and have an impact on quality improvement in providing an assessment of the information.

This study has showed that there is a strong correlation between the quality of the outcomes and the satisfaction of the elderly. 109 respondents (39.4%) perceived that the quality of outcomes was excellent, with a moderate level of satisfaction. The outcome is a result of the services provided by the service provider institutions, in the form of changes perceived by the consumers including their satisfaction. In the quality of outcomes questionnaire, question numbers 2 and three about Clean and Healthy Lifestyle Behaviour gave an indicator of the success of the quality outcome, in which the elderly had adopted a clean and healthy lifestyle and conducted physical activities for maintaining their health.

There were 26 respondents (9.4%) who perceived a poor quality level of outcome with a low level of satisfaction. These low results were caused by the outcome that the IHSPE could not

provide satisfaction to the elderly, as the service received by them was lower than their expectation about the quality of outcomes. The quality of outcome questionnaire question number 1 about blood pressure and blood glucose condition was one factor to do with the low rating of service quality of the IHSPE outcome. The elderly people who come upon the IHSPE treatment activities will be reliant on medication to maintain their blood glucose level and blood pressure. Some health promotion activities that are held in the IHSPE educate the elderly people about how to control their blood pressure and blood glucose levels in other ways besides medication, such as a healthy diet, physical activities, stress management and routine control. The expectation of the elderly about their treatment and medication in the IHSPE can lead to them providing a poor assessment of the quality level because they may not understand that there is another alternative to keep their blood glucose and blood pressure under control due to their absence in several IHSPE sections. These results support the research conducted by Kristina B W (2015), who found that respondents with less experience in IHSPE activities have less appreciation of the benefits of IHSPE activities, and end up giving a low rating because of their negative attitude.

Based on the demographic data, most of the elderly still had routine activities or work numbering 186 respondents (67.1%). One factor preventing the respondents from attending the IHSPE routinely was their routine activity; for example, working as traders, either in the home or at a market. The elderly assumed that their activities were more important than coming to the IHSPE because they had no financial benefits from the IHSPE so could not establish a positive attitude. The results of this study support Hutabarat (2012)'s statement that the respondents who gained a benefit from the IHSPE showed a positive attitude because of their good experience towards the benefits they perceived, so the elderly stated that the IHSPE was very important for both healthy and sick elderly people. Among the respondents who did not benefit from the IHSPE, most had a negative attitude towards IHSPE. They assumed that IHSPE activities were not useful because the doctors never performed a medical check-up. This result corresponds with those of a study conducted by Zarniyeti (2011), which stated that the respondents who benefited from IHSPE had a more positive attitude towards the IHSPE activities compared to the respondents who did not benefit from IHSPE, causing a negative attitude towards the existing services of the IHSPE.

Personal experience could affect someone's attitude; something that has previously happened or is currently happening in our lives will influence our appreciation of the stimulus. Little or no experience of an object tends to form a negative attitude towards the object (Anwar, 2008). Elderly people who rarely come to the IHSPE activities and only come during treatment activities are likely to show a negative attitude towards the IHSPE activities because they cannot perceive the benefit of the IHSPE activities. Some of the elderly people just came because of necessity, for a health check-up and for the treatment of their disease. This is in line with Parasuraman's statement in Nursalam (2015), that the rating related to the quality and satisfaction depends on the personal needs in which the customers' expectations vary, depending on the individual's characteristics and the circumstances that affect their personal needs. Elderly people who only expect treatment in the IHSPE are likely to provide a low rating for the quality of the other IHSPE activities besides the medical check-up and treatment, and do not perceive any benefit (outcomes) resulting from the IHSPE overall.

CONCLUSIONS

The service quality among the three sub-variables encompassing input, process, and outcome could determine the elderly people's level of satisfaction towards the IHSPE service. The good quality of input increases the elderly people's satisfaction through the development of human resources, cost and facilities as well as the implementation of modern technology in the IHSPE service. A good quality of process can increase the elderly person's satisfaction through upholding service ethics encompassing a good attitude, non-maleficence, respect for the elderly, and the right to justice in the IHSPE service. A good quality outcome can increase

the elderly people's satisfaction through their health status, behaviour and the attitude of the elderly in the IHSPE.

This study can be used by the PHC as a reference to enhance the quality of input, process, and the outcomes of the IHSPE service. This study also provides an insight for the elderly on how to give an appraisal of the IHSPE service, allowing the elderly to contribute to maintaining and enhancing the quality of the IHSPE service. Further study is needed to conduct an internal study of the service quality of the PHC and IHSPE programme so that it can be compared to the external study of the perceptions of the elderly, as currently conducted by the authors.

REFERENCES

Aaker, D, A., 1996. Measuring Brand Equity Across Products and Market. *California Manajemen Review*, 38, pp.102.

Angga, D, S., 2014. *Pengukuran Tingkat Kepuasan Pelanggan Terhadap Kualitas Pelayanan Dengan Metode Servqual "Studi Kasus Pada Pusat Oleh Oleh Harum Manis."* Universitas Brawijaya.

Anggri, V., 2011. *Analisis Kepuasan Pelanggan Terhadap Kualitas Pelayanan Jasa Pos Express Di PT. Pos Indonesia Cabang Surakarta*. Universitas Sebelas Maret Surakarta.

Azwar 2008. *Sikap Manusia, Teori dan Pengukurannya* 2nd ed., Yogyakarta: Pustaka Pelajar.

Badan Penelitian dan Pengembangan Kesehatan., 2012. *Riset Fasilitas Kesehatan*, Jakarta: Kementerian Kesehatan Republik Indonesia.

Christine, H., 2012. *Studi Kulaitatif PemanfaatanPosyandu Lansia di Wilayah Puskesmas Sarudik Kabupaten Tapanuli Tengah*. FakultasKesehatan Masyarakat Universitas Indonesia.

Desi, S, A., 2014. *Hubungan Antara Kinerja Kader Posyandu Terhadap Kepuasan Lansia di Kelurahan Rempoa Timur Jakarta*. Universitas Islam Negeri Syarif Hidayatullah.

Dewi, E, H., 2012. *Pemanfaatan Pos Pembinaan Terpadu Oleh Lanjut Usia Di Kecamatan Ciomas Kabupaten Bogor Tahun 2012 Dan Faktor Yang Berhubungan, Jakarta*. Fakultas Kesehatan Masyarakat Program Sarjana Kesehatan Masyarakat Universitas Indonesia.

Diana, S., 2010. *Manajemen Pemasaran Usaha Kesehatan* 4th ed., Yogyakarta: Nuha Medika.

Dinas Kesehatan Kota Surabaya., 2016. *Profil Dinas Kesehatan Kota Surabaya Tahun 2015*, Surabaya: Dinas Kesehatan Kota Surabaya.

Dinas Kesehatan Provinsi Jawa Tengah., 2016. *Profil Kesehatan Kabupaten dan Kota di Jawa Tengah Tahun 2015*, Semarang: Dinas Kesehatan Provinsi Jawa Tengah.

Dony, S., 2013. *Hubungan Pelayanan Posyandu Lansia dengan Tingkat Kepuasan Lansia di Wilayah Kerja Puskesmas Sukorambi Kabupaten Jember*. STIKES Bhakti Negara Jember.

Fitrah, W., 2010. *Memahami Kesehatan Pada Lansia* 3rd ed., Jakarta: CV. Trans Info Media.

Green, L W., 1980. *Health Program Planning An Educational and Ecological Approach*, Marshall W. Kreuter: Rollins School of Public Health of Emory University.

Herdining, W, P., 2013. Faktor-Faktor Yang Berhubungan Dengan Frekuensi Kehadiran Lanjut Usia Di Posyandu Lansia. *Jurnal Ilmiah Kebidanan*, 2(4 Juni 2013), pp.1

Hesti, W., 2010. *Analisis Faktor-Faktor Yang Mempengaruhi Pemanfaatan Posyandu Lansia di gantungan - Makam Haji Surakarta*. Universitas Muhammadiyah Surakarta.

Kementerian Kesehatan Republik Indonesia., 2010., *Pedoman Pengelolaan Kesehatan di Kelompok Lanjut Usia*, Jakarta: Direktorat Bina Upaya Kesehatan.

Kementerian Kesehatan Republik Indonesia., 2009. *Undang - Undang Kesehatan Nomor 36*, Jakarta: Kementerian Kesehatan Republik Indonesia.

Kementerian Kesehatan Republik Indonesia., 2013. *Pedoman Pembinaan Kesehatan Usia Lanjut.*, Jakarta: Direktorat Bina

Upaya Kesehatan.

Kepmenkes Nomor 52., 2015. *Rencana Strategis Kementerian Kesehatan Tahun 2015 - 2019*, Jakarta: Kementerian Kesehatan Republik Indonesia.

Kotler, K, L., 2009. *Manajemen Pemasaran* 13th ed., Jakarta: Erlangga.

Kristina, B, W, 2015., *Pengaruh Pendidikan Kesehatan dengan Media Audio Visual Terhadap Perilaku Ibu Dalam Penanganan Infeksi Saluran Pernafasan Akut Pada Balita di Kelurahan Lebijaga Kabupeten Ngada*. Universitas Airlangga Surabaya.

Lupiyopadi, R., 2009. *Manajemen Pemasaran Jasa* 2nd ed., Jakarta: Salemba Empat.

Nursalam, 2015. *Manajemen Keperawatan, Aplikasi dalam Praktek keperawatan Profesional*, Jakarta: Salemba Medika.

Nursalam, 2013. *Metodologi Penelitian Ilmu Keperawatan, Pendekatan Praktis*, Jakarta: Salemba Medika.

Parasuraman & Zeithaml, A., 1985. A Conceptual Model of Service Quality and Its Impact for Future Research. *Journal of Marketing*, III, pp.41–50.

Parasuraman & Zeithaml 1988. SERVQUAL : A Multiple - Item Scale for Measuring Consumer Perception of Service Quality. *Research Gate*, II, pp.13–16.

Permenkes Nomor 25., 2016. *Rencana Aksi Nasional Kesehatan Lanjut Usia Tahun 2016 - 2019*, Jakarta: Kementerian Kesehatan Republik Indonesia.

Permenkes Nomor 75., 2014. *Pusat Kesehatan Masyarakat*, Jakarta: Kementerian Kesehatan Republik Indonesia.

Pusat Data dan Informasi Kemenkes RI., 2013. *Buletin Lansia : Gambaran Kesehatan Lansia di Indonesia*, Jakarta: Kementerian Kesehatan Republik Indonesia.

Rizqiana, A., 2015. *Kualitas Pelayanan Kesehatan di Puskesmas Sedan Kabupaten Rembang*. Program Studi Ilmu Keperawatan, Fakultas Kedokteran UIN Syarif Hidayatullah Jakarta.

Sulistyorini., 2010. *Posyandu dan Desa Siaga* 1st ed., Yogyakarta: Nuha Medika.

Titi, W., 2015. Studi Deskriptif Implementasi Program Posyandu Lanjut Usia di RW IV Kelurahan Tanah Kali Kedinding Kecamatan Kenjeran Surabaya. *Kebijakan dan Manajemen Publik*, 3(Januari-April 2015).

Uswatun, H., 2012. *Faktor - Faktor Yang Mempengaruhi Kepuasan Lansia di Posyandu Lansia Kelurahan Wonokusumo Kecamatan Semampir Kota Surabaya, Surabaya*. Fakultas Ilmu Kesehatan Universitas Muhammadiyah Surabaya.

Yunus, M, B., 2013. *Pengaruh Kualitas Pelayanan Terhadap Kepuasan Pelanggan pada PT. PLN (Persero) Rayon Makassar Barat*. Universitas Hasanudin Makasar.

Zarniyeti., 2011. *Analisis Faktor-faktor yang Berhubungan dengan Pemanfaatan Posyandu Lansia oleh Lanjut Usia (> 60 tahun) di Wilayah Kota Pariaman Sumatera Barat Tahun 2011*. Fakultas Kesehatan Masyarakat Universitas Indonesia.

Zulian, Y., 2013. *Manajemen Kualitas Produk dan Jasa*, Yogyakarta: Fakultas Ekonomi Universitas Islam Indonesia.

RELATIONSHIP BETWEEN PROACTIVE COPING AND SELF-CARE MANAGEMENT IN PATIENT WITH PULMONARY TUBERCULOSIS

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ABSTRACT

Introduction: Patients with pulmonary tuberculosis not only experience physical problems but also face psychosocial problems, and this can get worse during the treatment phase that has an impact on the patients' self-care. In order to prevent further impact on the patients, proactive coping is needed. This study aimed to identify the relationship between proactive coping and self-care management in pulmonary tuberculosis patients. **Methods:** This study was a cross-sectional research study. As many as 105 respondents were taken with a consecutive sampling technique. The inclusion criteria of the respondents were that they were pulmonary tuberculosis patients both in the intensive and continuous phase. This research was conducted in three primary public health care centres in Surabaya, East Java, Indonesia. The variables were proactive coping that was measured by Proactive Coping Inventory (PCI) and self-care management that was measured by the Self-care Management questionnaire. The data was analysed using a Spearman test. **Results:** This study showed that proactive coping had a positive correlation with self-care management in patients with pulmonary tuberculosis (p= 0.000; r= 0,848). **Conclusion:** This study shows a strong correlation between the variables, where the higher the level of proactive coping, the better the self-care management in pulmonary tuberculosis patients. Further research can find out the factors that influence proactive coping in pulmonary tuberculosis patients, which can thus improve the self-care behaviour.

Keywords: coping proactive, self-care management, pulmonary tuberculosis

INTRODUCTION

Tuberculosis (TB) is a contagious bacterial infectious disease which has become a global concern. This disease is a major public health problem in Indonesia although a government program of TB control has been carried out over the last few decades. Indonesia is included in 14 countries with the world's highest burden of tuberculosis, tuberculosis-HIV, and tuberculosis-MDR (Falzon, D. Floyd, K. Getahun, H. Kanchar, A. Mirzayev, F. Raviglione, M. Timimi, H. Weyer, K. Zignol, 2015). Many means to control tuberculosis have already been undertaken and the incidents and deaths from tuberculosis have declined, but the worldwide death toll from tuberculosis is still high at 1.8 million people in 2016 (WHO, 2017).

The tuberculosis epidemic is larger than previously estimated, according to the WHO in the 2016 Global Tuberculosis Report. There are 10.4 million new tuberculosis incidence cases worldwide in the 2015 statistical data, equivalent to 28,500 people worldwide exposed to tuberculosis every day. Indonesia is included in the 6 countries that account for 60% of new tuberculosis cases in the world. Indonesia ranks second in the world as the largest contributor to tuberculosis patients after India (WHO, 2017). In 2015, the Case Detection Rate (CDR) of pulmonary tuberculosis in Indonesia was recorded at 125 cases per 100,000 population and in the last statistical data in 2015, there were 324,539 cases of tuberculosis in Indonesia (Kemenkes RI, 2016).

Statistical data of tuberculosis cases between provinces in 2015, East Java Province was ranked at second place with 110 cases per 100,000 population or equal to 21,475, and Surabaya contributed as the largest cases of pulmonary tuberculosis in East Java Province as many as 2,330 cases of pulmonary tuberculosis (Kemenkes RI, 2015). In 2016, the cases of pulmonary tuberculosis in Surabaya did not decrease. The number of cases of pulmonary tuberculosis reached 2,382. The highest tuberculosis cases were found in North Surabaya. In all three public health centres in North Surabaya, there were 143 cases of pulmonary tuberculosis in 2016 and in the first quarter of 2017.

During the treatment period of 6 months, there are not only the physical problems suffered in patients with pulmonary tuberculosis but they also face psychosocial problems and emotional changes due to the illness (Dwidiyanti, Noorratri and Margawati, 2017). The psychosocial problems that can occur in patients with pulmonary tuberculosis are feeling isolated by friends and relatives and difficulty continuing work, thus causing them to choose being more secluded (Williams & Kaur, 2016). The occurrence of psychosocial problems in pulmonary

tuberculosis patients will affect the coping strategy to be used on the patient itself, to allow them to be able to withstand the stressors of the disease (Yellappa *et al.*, 2016). The proper and effective use of coping creates a balance by adjusting to the change or burden and this will create an improvement in the individual (Mubarak and Susanto, 2006).

There has been a wide range of recent research on social cognition, social interaction, stress and coping aimed at analysing the process by which individuals can anticipate or detect potential stresses that will occur and have preventive measures to reduce the adverse consequences that will occur. Such behaviour reflects one form of coping which is proactive coping (Vaculikova, 2016). Individuals with proactive coping will take advantage of social and non-social resources, have goals for the future, use positive emotional strategies, and prevent and modify potential future stresses. (Schwarzer & Taubert, 2002). Proactive coping also positively correlates with social support and has a positive impact on individuals to improve their well-being (Greenglass and Fiksenbaum, 2009).

The handling of pulmonary tuberculosis requires the patient and family's active role as a support system to improve the patient's own health status (Kemenkes RI, 2016). The home health treatment or self-care management conducted by the patient will maintain or restore health, minimise disability from the illness and improve the patient’s independence. If self-care management is not done optimally, then there will be a decrease in the patient’s health status (Clark, 2008).

Proactive coping is also one of the coping methods that has a direct relationship with self-efficacy which is one of the basic components to perform self-care actions (Drummond Suzanne, 2014). Stanojević *et al.* (2014) also pointed out that proactive coping has a strong relationship with self-efficacy so as to improve self-care behaviour in patients with chronic diseases such as pulmonary tuberculosis. Therefore, it can be expected that there is a relationship between the use of this proactive coping strategy and the management of self-care actions in pulmonary tuberculosis patients which will result in an improvement in the patient's health status (Stanojević *et al.*, 2014).

It is necessary for the nurse as a caregiver and health care provider to provide better nursing intervention by improving pulmonary tuberculosis patients’ coping so that the pattern of pulmonary tuberculosis treatment will have more leverage. Thus, the authors are interested in examining the relationship between proactive coping strategies and self-care management in patients with pulmonary tuberculosis,

MATERIALS AND METHODS

This research study used the quantitative method with a cross-sectional approach. The sample of the respondents in this study was pulmonary tuberculosis patients who are undergoing treatment; as many as 105 respondents. This research was conducted from January to June 2017 in three primary public health care centres in Surabaya, East Java, Indonesia.

The data was collected using instrument tools in the form of a Proactive Coping Inventory (PCI) questionnaire and a self-care management list questionnaire in patients with pulmonary tuberculosis. The process of data analysis was using a Spearman rank correlation test with $\alpha \leq 0.05$.

This research had been approved by the Health Research Ethics Commission of the Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia on July 4th, 2017 with the certificate number of ethics 410-KEPK.

RESULTS

The majority of the respondents were male (51%), aged 46-55 years old (40%) with their most recent education being at primary level (47%). Most of them were self-employed or a trader with an income less than 1 million rupiahs (Table 1).

The distribution of a highly proactive coping sub-scale was mostly found on the subscale of instrumental support seeking followed by the emotional support scale. A total of 52 respondents had a high level on the instrumental support subscale (Table 2).

40.5% of the pulmonary tuberculosis patients had never been isolated as evidenced by the majority of the respondents never having paid any attention to the ventilation adequacy within the home. As many as 40.2% of respondents had rarely undertaken preventive measures, especially in the case of

hand washing, wearing masks and sputum disposal. The respondents still rarely do good nutrition management, where as many as 56.1% rarely consumed balanced nutrition in adequate proportions. A total of 47.9% of the respondents were good in terms of treatment, especially in taking drugs and routine check-ups at the health services, but there were still many who rarely did any exercise (Table 3).

Table 1. Demographic Characteristics of the Respondents

Characteristic	n	%
Age		
15 – 25 y.o	22	21
26 – 35 y.o	23	22
36 – 45 y.o	18	17
46 – 55 y.o	42	40
Sex		
Male	53	51
Female	52	49
Educational Background		
Elementary School	51	47
Junior High School	13	13
Senior High School	38	36
University/ Diploma	3	4
Occupation		
Entrepreneur/ Merchant	48	46
Private Company	22	21
Government Employees	2	2
Others (Unemployed)	33	31
Income		
<1 million	45	43
1 million < x < 2 million	8	8
≥ 2 million	19	18
No Income	33	31

Table 2. Proactive coping subscale in pulmonary TB patients

Subscale	Frequency		
	High	Moderate	Low
Proactive Coping Scale	38	56	11
Reflective Coping Scale	40	50	15
Preventive Coping Scale	46	42	17
Avoidance Coping Scale	42	48	15
Strategic Planning Scale	47	44	14
Instrument Support Seeking Scale	52	40	13
Emotional Support Scale	51	41	13

Table 3. Self care management in pulmonary TB patients

Sub-variable	Frequency (%)		
	Often	Rarely	Never
Isolation Action	25,2	34,3	40,5
Preventive Action	39,6	40,2	20,2
Nutrition Management	30,8	56,1	13.1
Medication & Excercise	47,9	29,9	22,2

The results of the Spearman correlation test obtained a level of significance p = 0.000, thus accepting the hypothesis which means that there is a relationship between proactive coping with self-care management in pulmonary tuberculosis patients. The correlation coefficient (r) showed a positive correlation (r = 0.848) which means that it had a high correlation. The direction of the relationship was positive, which indicates the higher the level of proactive coping then the higher the level of self-care management of the pulmonary tuberculosis patients.

DISCUSSION

Based on Table 2, it was found that 55 respondents had a moderate proactive coping rate and self-care management level, 31 respondents had a high proactive coping rate and high self-care management level. The results of this study indicate that there was a strong correlation between proactive coping with self-care management in pulmonary tuberculosis patients. This result is in line with the theory that proactive coping can improve self-care behaviour in patients with chronic diseases such as pulmonary tuberculosis (Stanojević *et al.*, 2014).

Based on Table 3, the largest frequency at a high level was found in the instrumental support subscale. The instrumental support subscale is an individual's focus for getting information, advice from others, support search and assistance when the individual is facing a stressor (Vaculikova, 2016). According to Greenglass and Fiksenbaum (2009), instrumental support or social support is positively correlated with proactive coping so that it has a positive impact on the individual to improve their well-being. Govender and Mash (2009) also said that social support is one of the factors to improve treatment compliance evidenced by the existence of a positive relationship between social support and proactive coping.

An example of an instrumental support search activity is where the pulmonary tuberculosis patients need information, advice, and help from others when problems occur. A total of 52 respondents stated that support such as advice and the assistance of others is needed when the pulmonary tuberculosis patients are undergoing treatment. The family is one aspect of this instrumental support

Table 4. The result of analysis

Level of Proactive Coping	Self-care management level		
	Good	Moderate	Bad
Low	6	5	0
Moderate	2	55	2
High	1	3	31
Spearman's Rho p = 0,000 ; r = 0,848			

quest. One example of family-provided assistance for pulmonary tuberculosis patients is accompaniment at the time of the ingestion of TB drugs.

According to Mufarokhah, Putra and Dewi (2016), the improvement of the level of coping and the intention of the self-management program (self-management program) will change the individual's behaviour. Changes in individual behaviour are influenced by behaviour control. De Ridder *et al.* (2012) explained that high self-control would shape the conductive behaviours to allow them to achieve a healthy life, so it is very profitable for the individual. Thoolen *et al.* (2007) explained that individuals with proactive coping will perform self-regulation actions which are processes in which people control and direct their actions in order to fulfil their goals. Ogden (2012) added that when a person has achieved their desired goal, it will increase self-efficacy that directly affects the individual self-care. Drummond Suzanne (2014) explained that self-efficacy is self-confidence and is one of the basic components to perform self-care nursing actions.

The results of this study are consistent with the results of a study by Weni (2014), which revealed that there is a significant association of proactive coping with Diabetes Self-Care Activities in elderly people with type 2 diabetes mellitus. Patients with high proactive coping rates will increase their self-care rates. In addition, proactive coping is a major predictor factor for coping mechanisms in patients with lower limb amputations (Solgajová, Sollár and Vörösová, 2015).

Table 2 shows that most patients have moderate proactive coping rates. This suggests that most pulmonary tuberculosis patients use proactive coping in everyday life even at moderate levels. The level of self-care management is also the majority, at a moderate level. This is due to the level of awareness of patients with pulmonary TB being low related to preventive measures for the transmission of pulmonary tuberculosis infection. Pulmonary TB patients only use masks at the time of taking TB drugs at the primary health care facilities when they meet the nurse or another health officer, and they still often dispose sputum indiscriminately.

Individuals with proactive coping see future events as a challenge and opportunity, by identifying collecting and utilising required resources (Stanojević *et al.*, 2014). Thus, someone with proactive coping will take any action to be able to solve the challenge. Based on the results of interviews and questionnaires, it was also found that the respondents thought that recovering from the pulmonary tuberculosis disease is a challenge by having to complete the treatment until they are completely healed and that they can go on to be as normally active as before. The respondents believe that taking regular and routine medication will cure the patients of the pulmonary tuberculosis disease.

CONCLUSIONS

It can be concluded that most of the pulmonary tuberculosis clients in the three public health care centres in Pegirian, Pulo Sawah, and Perak East had moderate proactive coping rates and self-care management. Proactive coping's highest point was found on the subscale of an individual's attempt to obtain information, advice, support, and assistance when the individual was facing a stressor. Moreover, the self-care highest points were obtained from the client's statement when taking anti-TB drugs and following the schedule of health check-ups routinely.

High proactive coping rates have an impact on the patient's self-care or self-care measures. This indicates that the higher proactive coping level of patients with pulmonary tuberculosis makes the level of self-care management also increase.

It is expected that there should be an effort to study the psychosocial aspects of pulmonary tuberculosis patients, one of which is the use of individual coping. Health education about self-care at home related to pulmonary tuberculosis should not only be done when it is the first visit of the patients to the health services, but it must be sustained, so that it will create an effective treatment for the patients. It is expected for nurses to be able to

increase the level of awareness of patients related to the transmission of pulmonary TB infection.

For further research, it can be expected to analyse the factors that influence the level of proactive coping in improving health level through self-care or self-care management in pulmonary tuberculosis patients.

REFERENCES

Clark, M. J. D. (2008) *Community health nursing : advocacy for population health*. 5th ed. Upper Saddle River N.J.: Pearson Prentice Hall.

Drummond Suzanne (2014) *Being Proactive About Proactive Coping: Exploring Future-Oriented Coping and Appraisal within a Transactional Framework | EQUELLA*, *Thesis (PhD Doctorate), Griffith University, Brisbane*. doi: https://www120.secure.griffith.edu.au/rch/items/a419f1d2-c301-4f2b-a166-efc7da07094c/1/Drummond_2014_01Abstract.pdf.

Dwidiyanti, M., Noorratri, E. D. and Margawati, A. (2017) 'Improving Self-Efficacy and Physical Self-Reliance of Patients with Pulmonary Tuberculosis through Mindfulness', *Nurse Media Journal of Nursing*, 6(2), p. 81. doi: 10.14710/nmjn.v6i2.12585.

Falzon, D. Floyd, K. Getahun, H. Kanchar, A. Mirzayev, F. Raviglione, M. Timimi, H. Weyer, K. Zignol, M. (2015) *Use of high burden country lists for TB by WHO in the post-2015 era*, *WHO press*. doi: http://www.who.int/tb/publications/global_report/high_tb_burdencountrylists2016-2020.pdf.

Govender, S. and Mash, R. (2009) 'What are the reasons for patients not adhering to their anti-TB treatment in a South African district hospital?'

Greenglass, E. R. and Fiksenbaum, L. (2009) 'Proactive Coping, Positive Affect, and Well-Being', *European Psychologist*, 14(1), pp. 29–39. doi: 10.1027/1016-9040.14.1.29.

Kemenkes RI (2015) *Kementerian Kesehatan Republik Indonesia*. 24 Maret. Jakarta.

Kemenkes RI (2016) *Kementerian Kesehatan Republik Indonesia*. 2017th edn. Jakarta: Kementrerian Kesehatan RI. 2017.

Mubarak, W. I. and Susanto, B. A. (2006) *Buku ajar ilmu keperawatan komunitas 2 : teori & aplikasi dalam praktik dengan pendekatan dan asuhan keperawatan komunitas, gerontik dan keluarga*. 1st edn. Jakarta: Sagung Seto.

Mufarokhah, H. M., Putra, S. and Dewi, Y. (2016) 'Self Management Program Meningkatkan Koping, Niat dan Kepatuhan Berobat Pasien PJK Setelah Pemberian Self Management Program', *Jurnal NERS*, 11(1), p. 56. doi: 10.20473/jn.V11I12016.56-62.

Ogden, J. (2012) *Health psychology*. McGraw-Hill.

de Ridder, D. T. D. *et al.* (2012) 'Taking Stock of Self-Control', *Personality and Social Psychology Review*, 16(1), pp. 76–99. doi: 10.1177/1088868311418749.

Schwarzer Ralf and Taubert Steffen (2002) 'Tenacious Goal Pursuits and Striving Toward Personal Growth: Proactive Coping', *Freie Universität Berlin*, pp. 19–35. doi: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.533.5201&rep=rep1&type=pdf.

Solgajová, A., Sollár, T. and Vörösová, G. (2015) 'Gender, age and proactive coping as predictors of coping in patients with limb amputation', *Kontakt*, 17(2), pp. e67–e72. doi: https://doi.org/10.1016/j.kontakt.2015.01.005.

Stanojević, D. *et al.* (2014) 'Proactive Coping as a Mediator Between Resources and Outcomes: A Structural Equations Modeling Analysis', *Applied Research in Quality of Life*. Springer Netherlands, 9(4), pp. 871–885. doi: 10.1007/s11482-013-9274-2.

Thoolen, B. *et al.* (2007) 'Beyond Good Intentions: the development and evaluation of a proactive self-management course for patients recently diagnosed with Type 2 diabetes', *Health Education Research*, 23(1), pp. 53–61. doi: 10.1093/her/cyl160.

Vaculikova, J. (2016) 'Proactive Coping

Behavior in Sample of University Students in Helping Professions'.

Weni, M. W. (2014) *Hubungan Koping Proaktif dengan Diabetes Self Care Activities pada Lansia dengan Diabetes Melitus Tipe 2*. Universitas Airlangga.

WHO (2017) 'Global tuberculosis report 2016', *WHO*. World Health Organization. Available at: http://www.who.int/tb/publications/global_report/gtbr2016_executive_summary.pdf.

Williams Veena and Kaur Harbans (2016) 'The Psychosocial Problems Of Pulmonary Tuberculosis PatientsUndergoing DOTS Therapy (Direct Observed Treatment ShortCourse Therapy) in Selected Areas of Jalandhar District, Punjab.', *Page 1 IOSR Journal of Pharmacy and Biological Sciences (IOSRJPBS)*. Bunkasha, 1(1), pp. 44–49.

Yellappa, V. *et al.* (2016) 'Coping with tuberculosis and directly observed treatment: a qualitative study among patients from South India', *BMC Health Services Research*. BioMed Central, 16(1), p. 283. doi: 10.1186/s12913-016-1545-9.

QUALITY OF LIFE AND CHARACTERISTICS OF COLOSTOMY PATIENTS

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ABSTRACT

Introduction: Colostomy imposed multiple impacts on the patient's life including physical, psychological, social, and spiritual. This study aims to identify the level of quality of life as well as to examine the differences of quality of life among colostomy patients with regards to certain demographic characteristics. **Methods:** This study used a cross-sectional and descriptive analytical approach. Seventy-one colostomy patients were recruited purposively to participate in the study. The studied variables included quality of life and demographic characteristics. The data was collected by using the WHO Quality of Life – BREF instrument. One-way ANOVA and an independent t-test were employed to analyse the differences in quality of life with regards to certain demographic characteristics. **Results:** The study found that the majority of subjects perceived that their level of quality of life ranged between very low to moderate (77.4%). Satisfaction with support from friends was rated as the highest item of quality of life, whereas satisfaction with sexual relationships was rated as the lowest item of quality of life. There was no significant difference in the patients' quality of life with regards to age group, educational background, occupation, length of being ostomate, sex, and other health problems. **Conclusions**: The study implied that nurses need to realise and pay attention to multiple aspects of stoma patient's quality of life. Nursing care should not merely focus on stoma care but also holistically consider on meeting sexual needs, as well as the psychological, social, and spiritual needs of the patients.

Keywords: colostomy, demographic characteristics, quality of life.

INTRODUCTION

Colorectal cancers remain a serious public health problem in Indonesia. The number of people living with colorectal cancer increases year to year. The data shows that colorectal cancer is listed as the third most prevalent cancer after lung cancer and prostate cancer (Sudoyo, 2012). In Europe and the United States, the number of people living with colorectal cancer was more than in Asia. American Cancer Society (2017) estimates for the number of colorectal cancer cases in the United States for 2017 is 95,520 new cases of colon cancer. Colorectal cancer is the second leading cause of cancer-related deaths in men and the third leading cause in women in the United States. During 2017, it is expected to cause about 50,260 deaths.

One of the common treatments for the colorectal cancer is surgery by removing the section of affected colon, followed by making a hole (stoma) in the abdominal wall to eliminate faeces (Siassi *et al.*, 2008; Carlsson *et al.*, 2010; Edwards *et al.*, 2014). This procedure is known as a colostomy. There are two types of colostomy according to the duration of the treatment that is required: temporary or permanent (Williams and Hopper, 2003; Dabirian *et al.*, 2010). Those who are undergoing colostomy permanently means that they have to live with the colostomy for the rest of their life. Such a condition would impact to multiple-facets of the patients' life including their physical, psychological, social, and spiritual well-being (Grant *et al.*, 2011; Swan, 2011; Liao and Qin, 2014; Rangki *et al.*, 2014; Faury *et al.*, 2017). In the other words, this may also impact on the life satisfaction, well-being, and quality of life of the patients.

Quality of life has become a major concern among health care professionals since it can be an outcome of health care interventions. Data regarding the quality of life also determine the appropriate interventions for the patients. Several studies have been done to investigate health-related quality of life among colostomy patients. Liao and Qin (2014) found that stoma patients faced difficulties functioning in work and social activities, sexuality and body image, and several problems with leakage and finding privacy to empty the pouch. This included types of personality, specific ego defence mechanisms, spirituality influenced health-related quality of life among colorectal cancer patients (Baldwin, C.M., Grant, M., Wendel, C., Rawl, S., Schmidt, Ko and Krouse, 2008; Sales *et al.*, 2014). In addition, the type of ostomy (temporary/permanent), the underlying disease, depression, problem with the location of the ostomy, and changes in clothing style had significant effects on the quality of life of stoma patients (Anaraki *et al.*, 2012). Difficulties with sleep, problems with body

image and depression have also been reported in association with quality of life (Grant *et al.*, 2011). In term of the patients' characteristics, Jayarajah and Samarasekera (2017) found that higher quality of life was associated with female sex, colostomies, comfortable income and satisfactory sexual activity, whereas lower quality of life was associated with significant changes in the style of dressing, feeling depressed, having thoughts of self-harm soon after surgery, and taking longer time to learn to take care of the stoma. In the Indonesian population, so far, there is a little known robust study on the quality of life and characteristics of colostomy patients. In fact, understanding the quality of life of patients who have undergone a colostomy is essential for evaluating the full impact of the colostomy on the individual, their family and their community.

According to a member of the Indonesian Enterostomal Therapist Nurse Association Bandung Chapter (personal communication with Nunung Nurhayati, Ners, ETN), there are more than 100 patients currently undergoing colostomy permanently in Bandung City, and their quality of life has not been evaluated. Therefore, the study aims to describe the level of quality of life of colostomy patients, as well as to test the difference in the quality of life of colostomy patients with regards to certain demographic characteristics.

MATERIALS AND METHODS

The study used a cross-sectional and descriptive analytical approach. Seventy-one respondents were recruited purposively. The inclusion criteria of the recruited respondents were being an adult, able to write and read in Indonesian, having no serious health problems such as severe heart disease, severe pulmonary problems, and severe neurologic impairment which would have made them unable to respond to the questionnaire properly, and who are voluntarily willing to participate in the study. The studied variables included quality of life and demographic characteristics. The data was collected using the self-administered WHO-BREF Quality of Life instrument which has already been translated into Indonesian language using a back translation technique by a panel expert (World Health Organization, 1996). Quality of life includes dimensions and

Table 1. Demographic characteristics of the respondents (n = 71)

Characteristics	n	%
1. **Age (year)**		
< 20	6	8.5
21 - 30	6	8.5
31 - 40	11	15.5
41 - 50	17	23.9
51 - 60	17	23.9
>60	14	19.7
M = 46.59 SD = 15.31 R = 17 – 78		
2. **Sex**		
Male	49	69.0
Female	22	31.0
3. **Religion**		
Islam	61	85.9
Christian	10	14.1
4. **Education**		
Primary School	18	25.4
Junior High School	16	22.5
Senior High School	20	28.2
University/College	17	23.9
5. **Occupation**		
Unemployed	15	21.1
Farmer	7	9.9
Civil servant	6	8.5
Employee	7	9.9
Self-employed	11	15.5
Retirement	12	16.9
Housewives	11	15.5
Labour	2	2.8
6. **Monthly income** (Indonesian Rupiah)		
No income	27	38.0
< 500,000	9	12.7
500,000 – 1,000,000	13	18.3
1,000,001 – 2,000,000	18	25.4
> 2,000,000	4	5.6
7. **Ethnicity**		
Sundanese	43	60.6
Javanese	16	22.5
Malay	7	9.9
Bataknese	4	5.6
Chinese	1	1.4

items of quality of life that were analysed descriptively. One-way ANOVA and an independent t-test were used to test the difference quality of life-based on certain characteristics. Approval and permission to conduct this study were taken from RSUP Dr. Hasan Sadikin Bandung.

RESULTS

Characteristics of the Respondents

The demographic and health characteristics of the respondents are presented in Table 1 and Table 2.

Table 2. Health characteristics of the respondents (n = 71)

	Characteristic	n	%
1.	**Other health problems**		
	None	58	81.7
	Hypertension	8	11.3
	Infection	1	1.4
	Genitourinary	2	2.8
	Diabetes Mellitus	2	2.8
2.	**Social activity**		
	No	50	70.4
	Yes	21	29.6
3.	**Length of time of being ostomate**		
	< 12 month	60	84.5
	13 – 24 month	8	11.3
	25 – 36 month	2	2.8
	37 – 48 month	1	1.4
	M = 7.62 SD = 7.9 R = 1 – 48		
4.	**Cost of stoma care/ month** (Thousand Rupiah)		
	M = 995 SD = 784.5 R = 20 – 4000		
5.	**Perception toward self-health status**		
	Good	16	22.5
	Moderate	39	54.9
	Poor	16	22.5
6.	**Family relationship**		
	Good	69	97.2
	Moderate	2	2.8

Table 3. Perceived quality of life and current health status (n = 71)

	Frequency (*f*)	Percentage (%)
Perceived quality of life:		
Very poor	5	7.0
Poor	15	21.1
Moderate	35	49.3
Good	16	22.5
Very good	0	0.0
Perceived current health status:		
Very unsatisfied	1	1.4
Unsatisfied	18	25.4
Moderate satisfied	40	56.3
Satisfied	12	16.9
Very satisfied		

The majority of the respondents (77.4%) perceived their level of quality of life as ranging from very poor to moderate, and most of them (83.1%) reported being very unsatisfied to moderate satisfaction in relation to their current health status, as presented in Table 3. As shown in Table 4, the core of each dimension of quality of life, standard deviation, and range. It seems that environmental dimension is the highest mean score chosen by the respondents, and followed by physical health, psychological, and social.

According to Table 5, the ranking of the five top items of quality of life that were selected by the respondents as highly satisfactory items in their quality of life. Satisfaction with support from friends was selected as the highest item in relation to their quality of life. Oppositely, Table 6 presents the ranking of the five lowest items of quality of life that were selected by the respondents as the lower satisfactory items of their quality of life. It seems that satisfaction with their sexual relationship was selected by most of the respondents as the lowest satisfactory item of their quality of life.

Results from the statistical test using ANOVA and the independent t-test found that there were no significant differences in the total quality of life score with regards to age group, education, occupation, the length of time of being ostomate, sex, and other health problems, as presented in Table 7.

DISCUSSION

The results of the study show that the majority of the respondents perceived that their level quality of life ranged from very poor to moderate. None of them perceived that their level of quality of life was very good. It is argued that the presence of the stoma on the part their body may interfere with their daily activities as well as their body image which influences their interactions with others. Thus, the presentation of a stoma would influence their perception of themselves which determines their life satisfaction. This is relevant to the previous study conducted by Liao and Qin (2014) that found that patients with a stoma experienced difficulties functioning in work and social situations. The patients also encountered issues with sexuality and body image, and difficulties with stoma function. In our study, the environmental dimension was the highest mean score chosen by the respondents, followed by physical health, psychological, and social. Our findings are consistent with previous studies that found that the stoma patients had more difficulty participating in social activities (Dabirian *et al.*, 2010; Anaraki *et al.*, 2012). Swan (2011)

Table 4. Mean, standard deviation, and range for each dimension of quality of life

	Range	Mean	SD
Physical health	15 – 27	19.24	2.73
Psychological health	12 – 25	17.68	2.37
Social relationship	5 – 14	8.32	2.13
Environmental	14 – 31	23.45	3.39
Total score	52 – 91	68.69	8.77

Table 5. Mean and standard deviation of the five top items quality of life

Quality of Life Items	Range	Mean	SD
Satisfied with support from friends	1 – 5	3.39	0.75
Satisfied with the living place	1 – 5	3.38	0.66
Satisfied with health assistances	1 – 5	3.25	0.95
Meaning of life	1 – 5	3.15	0.75
Enjoying life	1 – 5	3.13	0.67

Note: the range of each item is from 1 to 5, the higher of mean score for each item indicated the higher level of quality of life.

Table 6. Mean score and standard deviation of the five low items quality of life

Quality of Life Items	Range	Mean	SD
Financial sufficiency	1 – 5	2.63	0.76
Ability to do activity daily living	1 – 5	2.62	0.82
Ability to work	1 – 5	2.45	0.81
Ability to walk or going around	1 – 5	2.34	0.91
Satisfaction with sexual relationship	1 – 5	2.01	1.08

Note: the range of each item is from 1 to 5, the lower of mean score for each item indicated the lower level of quality of life.

and McMullen *et al.* (2008) pointed out that the colostomy application might have a negative impact on the patients' quality of life with regards to both social and family relationships, travelling, physical activity, sexual function and finances. The meaning of quality of life was constructed from a transactional process between an individual with an environment that is influenced by personal background, health, social situation, culture, and age. Anaraki *et al.*, (2012) argued that the underlying disease of the stoma, the type of ostomy (temporary/permanent), location of ostomy, depression, and changes in life style had a significant effect on overall quality of life.

The majority of the respondents rated their general health at a level of very unsatisfied to moderately satisfied. Results from the identification of other health problems (Table 2) indicated that a few of the respondents reported other health problems such as hypertension, infection, genitourinary, and diabetes mellitus. In addition, 16 of 71 respondents reported that their perception of self-health status was poor, and more than half of them perceived it as being moderate and good. It explained that other health problems being faced by the respondents influenced their perception towards their general health. The general health condition of colostomy patients was usually good as long as there were no associated complications which might impact on their general health.

Satisfaction with support from friends was selected by the respondents as the most satisfactory item of quality of life (M = 3.39, SD = 0.75), followed by satisfaction with their living place, health assistance, the meaning of life, and enjoying life. This result reflects the culture of collectivity that is commonly embedded in Eastern Society, including the Sundanese culture which constitutes the majority of the respondents. The Sundanese philosophy of *saling asah, saling asih, dan saling asuh* (reciprocity in caring and empowerment) has underlying moral values to provide care, assistance, help, and support among family members, relatives, neighbours, and the community at a larger scope (Garna, 1984). It was a common phenomenon in Sundanese society that when a community members is sick, he/she would receive a lot of attention from their relatives, neighbours, and

Table 7. The differences of total mean score of quality of life-based on age group, education, occupation, length of time of being ostomate, sex, and other health problems

Variable	n	Mean	SD	95% CI/SE*	*p*-value
Age (year)					0.49
< 20	6	69.67	6.976	62.35 – 76.99	
21 – 30	6	64.50	8.666	55.41 – 73.59	
31 – 40	11	68.64	10.053	61.88 – 75.39	
41 – 50	17	70.59	7.001	66.99– 74.19	
51 – 60	17	70.41	10.168	65.18 – 75.64	
> 60	14	65.71	8.651	60.72 – 70.71	
Education					0.96
Primary school	18	68.61	9.172	64.05 – 73.17	
Junior High School	16	69.69	10.084	64.31 – 75.06	
Senior High School	20	68.15	7.372	64.70 – 71.60	
University/College	17	68.47	9.274	63.70 – 73.24	
Occupation					0.96
Unemployed	15	66.80	8.521	62.08 – 71.52	
Farmer	7	75.00	4.243	71.08 – 78.92	
Civil servant	6	73.50	11.675	61.25 – 85.75	
Employee	7	67.29	8.381	59.53 – 75.04	
Self-employee	11	70.09	8.893	64.12 – 76.07	
Retirement	12	65.83	6.780	61.53 – 70.14	
Housewives	11	65.45	7.992	60.09 – 70.82	
Labor	2	78.50	17.678	-80.33 –237.33	
Length of time of being ostomate					0.96
< 12 month	60	69.13	-	-	
13 – 24 month	8	66.75	1.155	66.82 – 71.44	
25 – 36 month	2	63.00	3.075	59.48 – 74.02	
37 – 48 month	1	69.00	4.000	12.18 – 113.82	
Sex					0.19
Male	49	69.61	9.14	1.30	
Female	22	66.64	7.68	1.64	
Other health problems					0.93
Yes	13	68.85	5.90	1.22	
No	58	68.66	9.34	1.64	

**95% CI for variable age group, education, occupation, and length of time of being ostomate; and SE for variable sex and other health problems.*

community s which emphasises on providing support, comfort, and prayers for the sick. It is supported by the data that almost all of the respondents (97.2%) acknowledged support from their family. Like other studies demonstrate that patients with a permanent stoma had satisfactory family support (Ciorogar, G., Zaharie, F., Ciorogar, A., Birta, D., Degan *et al.*, 2016). Satisfaction with their living place indicated that most of the respondents felt comfort with their home condition. It can be a base level of data to help develop home-based care for colostomy patients. In terms of health assistance received, most of the respondents felt satisfied with the health service given by the health care provider. Although the respondents have to undergo a stoma on their abdomen, they are still able to enjoy their life and experience the meaning of life.

Satisfaction with their sexual relationship was chosen as the lowest item in relation to quality of life by most respondents. The findings of the study are consistent with previous studies that reported that stoma patients experienced a loss in their sexual activity after stoma surgery (Gemmill *et al.*, 2010; Anaraki *et al.*, 2012). This condition has

resulted in low self-confidence of the respondents in performing sexual activities. The majority of the respondents' ages ranged from 21 to 60 years old, and they were married. In the range of age, they were considered to be sexually active, particularly the males. The presentation of the stoma hole on the abdomen often resulted in a negative self-perception towards their body image, and they had become less sexually attractive to the spouses. As a consequence, their sexual desire might decrease.

Several socio-demographic and disease parameters have been identified to correlate with the health parameter of the quality of life of patients with colorectal cancer and a stoma (Dunn *et al.*, 2003; Sales *et al.*, 2014). The results of the study revealed that there were no significant differences between the quality of life score with regards to age groups, education background, occupation, the length of being ostomate, sex, and other health problems experienced. This is possibly due to the respondents' variations regarding their characteristics not being very much different, which led them to selecting the same items in relation to quality of life. There was difficultly to drawing up a heterogeneous subject in this study.

The findings of the study were also consistent with the previous study that found that there was no significant correlation between sex or age group and the quality of life in a patient with colorectal cancer (Dunn *et al.*, 2003). However, a few studies reported that there was a significant difference in the patients' quality of life with regards to sex which was that women with stoma scored consistently lower than men with a stoma for the overall quality of life domains (Krouse *et al.*, 2007, 2009; Grant *et al.*, 2011)(Grant *et al.*, 2011) .

This study found that the majority of patients were young or of middle adult age (< 60 years), their monthly income was less than IDR 2,000,000 ($ 140), and their length of being ostomate was under 12 months. Previous studies documented that younger patients with rectal cancer felt more stigmatised than older patients. In addition, low-income earners were more likely to have a lower quality of life compared to patients with higher incomes (Dunn *et al.*, 2003). The study conducted by showed Jansen *et al.* (2010) that colorectal cancer survivors who have been living with the disease for more than five years indicated that their overall domains of quality of life were better than those who had ived with it for under five years. The other study demonstrated that ostomy patients with more than two years experience had shown a better quality of life (Fucini *et al.*, 2008; Sales *et al.*, 2014). It is understandable that the more time the survivors live for, the more chance there is to learn and adjust to the new conditions of living with cancer and stoma treatment.

CONCLUSIONS

Colorectal cancer and colostomy treatment have caused several health problems to arise which have impacted on the quality of life of the survivors. The majority of the subjects in the study reported that their level of quality of life was from very low to moderate. The variation of personal characteristics and experience in dealing with the disease could affect their perception regarding quality of life. This study highlighted the common phenomenon of the impact of colostomy on the quality of life and several characteristic factors that may influence the quality of life. It implies that nurses need to take into consideration evaluating the quality of life of colostomy patients following colostomy surgery as an integrated part of comprehensive nursing care.

REFERENCES

American Cancer Society (2017) *Cancer Facts and Figures 2017*, *Atlanta*. doi: 10.1101/gad.1593107.

Anaraki, F. *et al.* (2012) 'Quality of life outcomes in patients living with stoma', *Indian J Palliat Care*, 18(3), pp. 176–80. doi: 10.4103/0973-1075.105687.

Baldwin, C.M., Grant, M., Wendel, C., Rawl, S., Schmidt, C. M., Ko, C. and Krouse, R. (2008) 'Influence of Intestinal Stoma on Spiritual Quality of Life of U.S. Veterans', *J Holist Nurs*, 26(3), pp. 185–94. doi: 10.1177/0898010108315185.

Carlsson, E. *et al.* (2010) 'Concerns and quality of life before surgery and during the recovery period in patients with rectal cancer and an ostomy', *J Wound Ostomy Continence Nurs*, 37(6), pp. 654–61. doi:

10.1097/WON.0b013e3181f90f0c.

Ciorogar, G., Zaharie, F., Ciorogar, A., Birta, D., Degan, A. *et al.* (2016) ‘Quality of life outcomes in patients living with stoma’, *International Journal of the Bioflux Society*, 8(3), pp. 137–140. Available at: http://www.hvm.bioflux.com.ro/docs/2016.137-140.pdf.

Dabirian, A. *et al.* (2010) ‘Quality of life in ostomy patients: A qualitative study’, *Patient Preference and Adherence*, 5, pp. 1–5. doi: 10.2147/PPA.S14508.

Dunn, J. *et al.* (2003) ‘Quality of life and colorectal cancer: a review’, *Australian and New Zealand Journal of Public Health*, 7(1), pp. 41–53. doi: 10.1111/j.1467-842X.2003.tb00378.x.

Edwards, B. K. *et al.* (2014) *Annual Report to the Nation on the Status of Cancer, 1975-2010, Featuring Prevalence of Comorbidity and Impact on Survival among Persons with Lung, Colorectal, Breast or Prostate Cancer*. United State. doi: 10.1007/978-1-62703-673-3.

Faury, S. *et al.* (2017) ‘Patient education interventions for colorectal cancer patients with stoma: A systematic review’, *Patient Education and Counseling*. Elsevier Ireland Ltd, 100(10), pp. 1807–1819. doi: 10.1016/j.pec.2017.05.034.

Fucini, C. *et al.* (2008) ‘Quality of life among five-year survivors after treatment for very low rectal cancer with or without a permanent abdominal stoma.’, *Annals of surgical oncology*, 15(4), pp. 1099–1106. doi: 10.1245/s10434-007-9748-2.

Garna, J. (1984) ‘Gambaran umum daerah Jawa Barat’, in Ekadjati, E. S. (ed.) *Masyarakat Sunda dan kebudayaannya*. Jakarta: Girimukti Pusaka, pp. 9–74.

Gemmill, R. *et al.* (2010) ‘Going with the flow: quality-of-life outcomes of cancer survivors with urinary diversion’, *Journal of wound, ostomy, and continence nursing*, 37(1), pp. 65–72. doi: 10.1097/WON.0b013e3181c68e8f.

Grant, M. *et al.* (2011) ‘Gender differences in quality of life among longterm colorectal cancer survivors with ostomies’, *Oncol Nurs Forum.*, 38(5), pp. 587–596. doi: 10.1188/11.ONF.587-596.GENDER.

Jansen, L. *et al.* (2010) ‘Quality of life among long-term (>5 years) colorectal cancer survivors - Systematic review’, *European Journal of Cancer*. Elsevier Ltd, 46(16), pp. 2879–2888. doi: 10.1016/j.ejca.2010.06.010.

Jayarajah, U. and Samarasekera, D. N. (2017) ‘A cross - sectional study of quality of life in a cohort of enteral ostomy patients presenting to a tertiary care hospital in a developing country in South Asia’, *BMC Research Notes*. BioMed Central, 10(75), pp. 4–11. doi: 10.1186/s13104-017-2406-2.

Krouse, R. *et al.* (2007) ‘Quality of Life Outcomes in 599 Cancer and Non-Cancer Patients with Colostomies’, *Journal of Surgical Research*, 87(1), pp. 79–8. doi: 10.1016/j.jss.2006.04.033.

Krouse, R. S. *et al.* (2009) ‘Health-Related Quality of Life Among Long-Term Rectal Cancer Survivors With an Ostomy : Manifestations by Sex’, *Journal of Clinical Oncology*, 27(28), pp. 4664–4670. doi: 10.1200/JCO.2008.20.9502.

Liao, C. and Qin, Y. (2014) ‘Factors associated with stoma quality of life among stoma patients’, *International Journal of Nursing Sciences*. Elsevier Ltd, 1(2), pp. 196–201. doi: 10.1016/j.ijnss.2014.05.007.

McMullen, C. K. *et al.* (2008) ‘The greatest challenges reported by long-term colorectal cancer survivors with stomas’, *J Support Oncol*, 6(4), pp. 175–82.

Rangki, L. *et al.* (2014) ‘Pengalaman Hidup Pasien Stoma Pascakolostomi’, *Jurnal Keperawatan Padjajaran*, 2(2).

Sales, P. M. G. *et al.* (2014) ‘Psychosocial predictors of health outcomes in colorectal cancer : A comprehensive review’, *Cancer Treatment Reviews*. Elsevier Ltd, 40(6), pp. 800–809. doi: 10.1016/j.ctrv.2014.03.001.

Siassi, M. *et al.* (2008) ‘Quality of life and patient’s expectations after closure of a temporary stoma’, *International Journal of Colorectal Disease*, 23(12), pp. 1207–1212. doi: 10.1007/s00384-

008-0549-2.

Sudoyo, A. (2012) ‘Kanker usus besar apakah masih ada harapan?’, in. Semarang.

Swan, E. (2011) ‘Colostomy, management and quality of life for the patient’, *British Journal of Nursing*, 20(1), pp. 24–8. doi: 10.12968/bjon.2011.20.Sup11.S22.

Williams, L. S. and Hopper, P. D. (2003) *Understanding medical-surgical nursing*. 2nd edn. Philadelphia: F.A. Davis Company.

World Health Organization (1996) *Introduction , administration , scoring and generic version of the assessment field trial version December 1996 Program of Mental health World Health Organization*. Geneva. Available at: http://www.who.int/mental_health/media/en/76.pdf.

PROTECTIVE EFFECTS OF CATECHIN ISOLATE FROM GMB4 CLONE GREEN TEA AGAINST EPC IN TYPE 2 DIABETES MELLITUS

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ABSTRACT

Introduction: Type 2 diabetes mellitus is a cause of morbidity and mortality, especially due to vascular complications. This study aims to evaluate the role of catechin isolates from GMB4 clone green tea in the dynamic of endothelial progenitor cells (EPC) in type 2 diabetes mellitus (DM). **Methods:** 25 Wistar rats were divided into 5 groups, including a control group, type 2 diabetes mellitus group, treated daily with the administration of extract of catechin isolate from GMB4 clone green tea at 20; 40; and 60 mg/kgBB doses for 6 weeks. EPCs analysis was performed by flow cytometry, and the level of NO was analysed using a spectrophotometer, and the serum levels of SDF-1α were performed with an ELISA technique. The analysis of the expression of SDF-1 and CXCR-4 was performed using immunohistochemistry techniques. **Results:** The CD34+ and CD133+ count was lower in the DM group compared to the control group ($p < 0.05$). Of the three doses of catechin, only the highest dose was able to significantly increase the CD34+ count compared to the rats in the diabetes mellitus group ($p < 0.05$). The serum NO level was significantly higher in the DM control group ($P < 0.05$). All three doses of catechin were able to significantly increase the expression of SDF-1α and CXCR4 in the aorta compared to the DM group or the control group ($p<0.05$). **Conclusion:** It can be concluded that a high dose of cathecin isolate from GMB-4 clone green tea (60 mg/kgBB) may trigger the proliferation and maturation of EPCs in rats with type 2 DM in an environment with a high level of NO, involving the interaction between SDF-1α and CXCR4 in the aorta.

Keywords: aorta; catechins; endothelial progenitor cells; hyperglycemia.

INTRODUCTION

Type 2 diabetes mellitus is a chronic multi-factorial metabolic disease caused by a complex interaction between various environmental and genetic factors (G. P. Fadini *et al.*, 2006). Type 2 diabetes mellitus is a cause of morbidity and mortality, especially due to vascular complications that lead to retinopathy, nephropathy, ischemic heart disease and peripheral vasculopathy (Tang, Fang and Zhou, 2013).

A severe decrease in the population of circulatory precursor cells (CD34+ dan CD133+) with the ability for them to differentiate into mature endothelial cells and to play a role in vascular homeostasis and neoangiogenesis has been characterised in diabetes mellitus (Gian Paolo Fadini, Saverio Sartore, 2007). In order to maintain vascular homeostasis, vascular endothelial cells will produce several biofactors (Vanhoutte, 2003). During endothelial injury, there is an increase in endothelial cell division to trigger regeneration in the damaged endothelial cells (Brandes, Fleming and Busse, 2005). Endothelial progenitor cell will inhibit the senecence of endothelial cells, preserving endothelial homeostasis, and supporting vascular recovery involved in various diseases, including type 2 diabetes mellitus (Urbich and Dimmeler, 2004).

Stromal cell-derived factor 1 (SDF-1) belongs to a group of α-chemokines that will bind to the CXCR4 transmembrane protein receptor(G. P. Fadini *et al.*, 2006). One of the main physiological functions of SDF1/CXCR4 is to regulate *homing* and the self-defence system of the stem cells and hematopoietic progenitor cells (Christopherson, 2003). SDF1 also functions to increase the proliferation of hematopoietic progenitor cells, attracting CXCR4-expressing progenitor cells to the bone marrow microenvironment (Liles *et al.*, 2003).

Various plant products have been used as a therapeutic substance, including green tea (Wardhana, Ratnawati and Suyuti, 2013). The Tea and Quinine Research Association in Gambung have developed a variety of green teas with higher catechins compared to other tea plants, called GMB4 clone (Mawarti, Ratnawati and Lyrawati, 2012). Previous studies have shown that the catechins isolated from GMB4 clone green tea are metabolically beneficial due to the fact that they inhibit insulin resistance in visceral adipose cells and adipose tissues (Susanti, Rudijanto and Ratnawati, 2012) and the decrease of C/EBPα expression in cultured mice pre-adiposites (Mawarti, Ratnawati and Lyrawati, 2012). On the other hand, in the in-vivo studies, the catechins isolated from GMB4 clone green tea were shown to be able to reduce eNOS, to

increase the expression of PI3K and to decrease the activity of p38 MAPK in rats with high fat diet (Wardhana, Ratnawati and Suyuti, 2013).

To our knowledge, there have been no studies conducted to identify the benefit of catechins isolated from GMB4 clone green tea towards the endothelial progenitor cells in type 2 diabetes. Therefore, in this study, we have evaluated the role of catechins isolated from GMB4 clone green tea on the dynamics of endothelial progenitor cells in type 2 diabetes mellitus.

MATERIALS AND METHODS

Subjects

Twenty five 3-4 months old male Wistar rats were divided into five groups, namely the control group, type 2 diabetes mellitus group, and three groups of rats with type 2 diabetes mellitus treated with catechins isolated from GMB4 clone green tea in 20; 40; and 60 mg/kgBW doses respectively, every day for 6 weeks.

We had to induce type 2 diabetes mellitus in rats. Before being treated, the rats underwent an adaptation phase for 2 weeks with a standard diet. The induction of type 2 diabetes mellitus started with a hypercholesterol diet for 45 days, followed by an intraperitoneal injection of 30 mg/kgBW streptozotocin. Three days after the induction of streptozotocin, their blood glucose was examined after a 6 hour fast. If the blood glucose level reached above 250 mg/dl, the rat was categorised as having hyperglycemia.

Administration of catechins isolates

The catechins isolated from GMB-4 clone green tea were administered via an NGT to the animals in the doses described above, with a maximum of 10 ml/day. Before touching the animals, the NGT must first be filled with an isolate dose with no air bubble, as that would generate pain and cause the rat to struggle. The NGT was equipped with a round tip needle to reduce the possibility of tracheal injection. The isolates was administered in 20; 40; and 60 mg/kgBW doses daily for 6 weeks.

Euthanasia

After 6 weeks of treatment with catechins isolated from the GMB-4 Clone Green Tea, the animals were then dissected as follows: the animals were locally anesthesised with ether followed with a dissection of the abdominal region and diaphragm. Five ml blood samples were then collected from the animal's heart using a syringe. The blood samples collected were then examined. The deceased animals were buried in a location provided by the Physiology Laboratorium of Brawijaya University.

EPCs count analysis

The EPCs count analysis was performed using flow cytometry. The EPCs were characterised by CD34+ and CD133+cells.

Nitrite oxide measurement

The nitrite oxide was measured using the colorimetric technique. The analysis procedure was performed according to the detailed instructions provided in the kit.

SDF1-α level and concentration measurement

The SDF1-α serum concentration measurement was performed using a SDF1-α ELISA kit. The analysis procedure was performed according to the detailed instructions provided in the kit. The measurement of SDF1-α expression in the aorta was performed using the immunohistochemistry technique.

Measurement of CXCR-4 expression

The measurement of CXCR-4 expression in the aorta was performed using the immunohistochemistry technique (Schmidt -Lucke et al., 2005) (Leone et al., 2009).

Ethics

The care of the animal subjects and the experimental procedure was approved by the Research Ethics Committee of Brawijaya University Medical School, Malang, East Java, Indonesia.

Statistical analysis

The data was presented in means ± SD and the difference between treatment groups was analysed using a one-way ANOVA test in SPSS 16.0 software. The Post-Hoc test performed in the ANOVA test generated a significant difference. P value of < 0.05 which was deemed statistically significant.

RESULTS

The CD34+ count was lower in the diabetes mellitus group compared to the control group ($P < 0.05$). Of the three catechin doses, only the highest dose was able to significantly increase the CD34+ count compared to the diabetes mellitus group ($P < 0.05$). This increased CD34+ count reached a level comparable to that of the control group ($P > 0.05$), as seen in Figure 1.

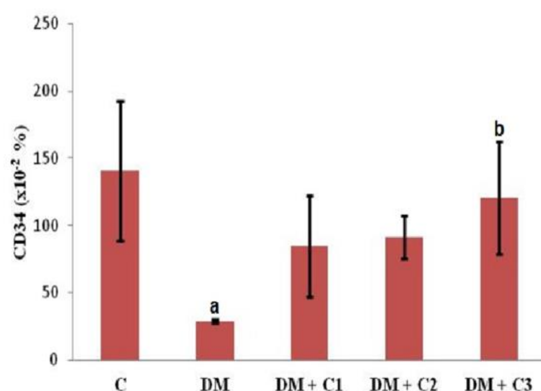

Figure 1. The $CD34^+$ count in each experimental groups. Values are presented as mean ± SD; $^aP < 0.05$ in comparison with control (C) group; $^bP < 0.05$ in comparison with diabetes mellitus (DM) group. DM + C1: diabetes mellitus group received first dose of catechin; DM + C2: diabetes mellitus group received second dose of catechin; DM + C3: diabetes mellitus group received third dose of catechin; %: percentage.

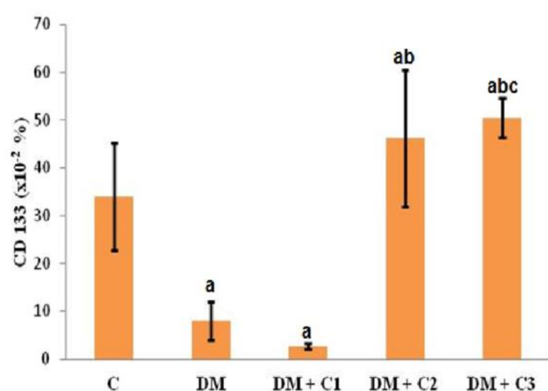

Figure 2. The $CD133^+$ count in each experimental groups. Values are presented as mean ± SD; $^aP < 0.05$ in comparison with control (C) group; $^bP < 0.05$ in comparison with diabetes mellitus (DM) group; $^cP < 0.05$ in comparison with first dose catechin administered (DM + C1) group; DM + C2: diabetes mellitus group received second dose of catechin; DM + C3: diabetes mellitus group received third dose of catechin; %: percentage

The CD133+ count was lower in the diabetes mellitus group compared to the control group ($P < 0.05$). Of all three catechin doses, only the second highest dose was able to significantly increase the CD133+ count

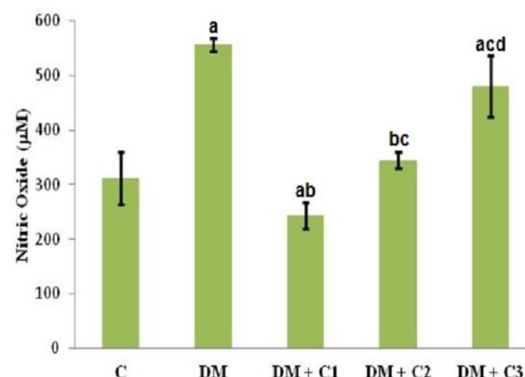

Figure 3. The serum NO level in each experimental groups. Values are presented as mean ± SD; $^aP < 0.05$ in comparison with control (C) group; $^bP < 0.05$ in comparison with diabetes mellitus (DM) group; $^cP < 0.05$ in comparison with first dose catechin administered (DM + C1) group; $^dP < 0.05$ in comparison with second dose catechin administered (DM + C2) group. DM + C3: diabetes mellitus group received third dose of catechin; µM: micromolar.

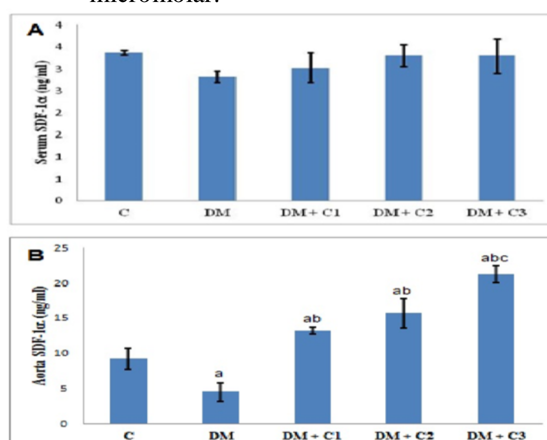

Figure 4. The serum SDF-1α level (A) and aorta expression of SDF-1α (B) in each experimental groups. Values are presented as mean ± SD; $^aP < 0.05$ in comparison with control (C) group; $^bP < 0.05$ in comparison with diabetes mellitus (DM) group; $^cP < 0.05$ in comparison with first dose catechin administered (DM + C1) group; DM + C2: diabetes mellitus group received second dose of catechin; DM + C3: diabetes mellitus group received third dose of catechin; SDF-1α: stromal derived factor-1α; ng/ml: nanogram/mililiter.

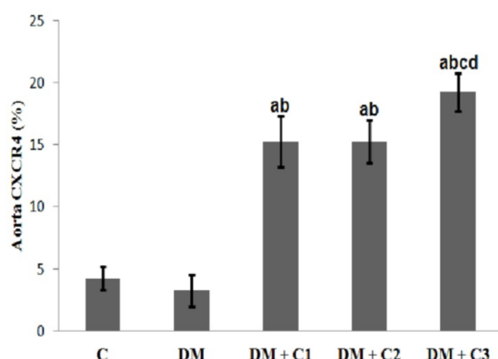

Figure 5. The aorta expression of CXCR4 in each experimental groups. Values are presented as mean ± SD; [a]P < 0.05 in comparison with control (C) group; [b]P < 0.05 in comparison with diabetes mellitus (DM) group; [c]P < 0.05 in comparison with first dose catechin administered (DM + C1) group; [d]P < 0.05 in comparison with second dose catechin administered (DM + C2) group; DM + C3: diabetes mellitus group received third dose of catechin; %: percentage.

compare to the diabetes mellitus group (P < 0.05), and this increased CD133+ count was comparable to that of the control group (P > 0.05). In addition, there was no difference in the CD133+ count between both highest doses (P > 0.05) (Figure 2).

The serum level of NO was significantly higher in the diabetes mellitus compared to the control group (P < 0.05). Of all three catechin doses, only the first and second doses were able to significantly reduce the NO level compared to the diabetes mellitus group (P < 0.05). However, only the rats administered with second doses have NO levels comparable to that of the control group (P > 0.05), as seen in Figure 3.

For the serum SDF-1α concentration, there was no significant difference between all of the treatment groups (P > 0.05) (Figure 4A). Meanwhile, the expression of SDF-1α in the aorta was significantly lower in the diabetes mellitus group compared to the control group (P < 0.05). All three doses of catechin were able to significantly increase the expression of SDF-1α in the aorta compared to the rats in the diabetes mellitus group or the control group (P < 0.05) (Figure 4B).

Figure 5 presents the CXCR4 level in the aorta between groups. There was no significant difference in terms of the expression of CXCR4 in the aorta between the diabetes mellitus group and the control group (P > 0.05). All three doses of catechin seemed able to significantly increase the expression of CXCR4 in the aorta compared to the rats in the diabetes mellitus group or the control group (P < 0.05). There was no significant difference for CXCR4 expression in the aorta between the first and second doses of catechin (P > 0.05).

DISCUSSION

To fight against endothelial cell injury due to diabetes, several recovery mechanisms will ensue. Traditionally, the permanent proliferation of cells in the vascular tissue is responsible for microvascular recovery. To date, there has been numerous evidence that EPCs play a role in the recovery and homeostasis of endothelial cells. EPCs are produced in the bone marrow, mobilised in the circulation and recruited in the location of injury. In the location of injury, EPCs will differentiate into endothelial cells to replace the damaged endothelial cells or to provide paracrine support to the vascular cells. eNOS plays a role in the differentiation of EPCs and NO from the eNOS that are able to regulate endothelial recovery and reendothelialisation through the differentiation of EPCs. In the current study, the serum NO level was found to be significantly higher in the diabetes mellitus group compared to the control group (P < 0.05). This indicates that the increase of NO is a compensational mechanism aimed to regulate endothelial recovery and reendothelialisation through the differentiation of EPC into endothelial cells. In this study, the CD34+ and CD133+ count was found to be lower in the diabetes mellitus group compared to the control group (P < 0.05). This indicates that despite the existence of a homeostasis mechanism through the increase of the NO level, hyperglycemia is still able to trigger a decrease in the CD34+ and CD133+ cell population. Various studies have mentioned that diabetic patients experienced a decrease in EPCs as well as the functional disruption of EPCs, including a decrease in proliferation, adhesion, migration and incorporation (Boos, Lip and Blann, 2006) (Gian Paolo Fadini *et al.*, 2006) (Gallagher *et al.*, 2007) (Peristiowati, Indasah and Ratnawati, 2015). This study is consistent with previous studies in finding a reduced population, migration and proliferation of EPCs in rats with type 2

diabetes mellitus (Tikhonenko *et al.*, 2013) (Chen *et al.*, 2010).

The increased SDF-1α was able to induce chemotaxis of EPCs via the HIF pathway by binding with CXCR4. The defect of EPCs mobilisation in rats with diabetes was associated with the insufficiency of SDF-1α release (Gill *et al.*, 2001) (Chen *et al.*, 2010) (Gallagher *et al.*, 2007). In the current study, there was no significant difference in terms of serum SDF1-α concentration between all of the treatment groups ($P > 0.05$). This indicates that there was no insufficiency in SDF-1α release. However, the expression of SDF-1α in the aorta was significantly lower in the diabetes mellitus group compared to the control group ($P < 0.05$). In addition, there was also no significant difference in terms of the expression of CXCR4 in the aorta between diabetes mellitus group and the control group ($P > 0.05$). This indicates that hyperglycemia reduces the bond between SDF-1α and CXCR4 in the aorta. Thus, in the rat model of type 2 diabetes mellitus, hyperglycemia will trigger a decrease in $CD34^{+}$ and $CD133^{+}$ cell population as well as its homing capacity, despite the existence of a compensational mechanism in the form of increased NO level.

In previous studies, catechins were found to be able to accelerate endothelial progenitor cell proliferation along with an increased dose and duration of incubation (Boos, Lip and Blann, 2006). In the current study, the highest dose was found to be able to significantly increase $CD34^{+}$ count compared to the rats in the diabetes mellitus group ($P < 0.05$), and this increase is comparable to that of the control group ($P > 0.05$). Meanwhile, the maturation function of EPCs was found to be significantly increased in the groups treated with the second and third doses compared to the diabetes mellitus group ($P < 0.05$), and there were no significant difference in terms of CD133+ count between the two highest doses ($P > 0.05$). However, all three doses of cathecin were able to significantly increase the expression of SDF1-α and CXCR4 in the aorta compared to the diabetes mellitus or control group ($P < 0.05$). This indicates that all of the doses of catechin were able to increase the bond between SDF-1α and CXCR4, despite the fact that EPCs proliferation and endothelial maturation only optimally occurs in the highest dose. When associated with the NO level, it was found that the group treated with the third dose had a very high level of NO, therefore, it can be concluded that the recovery of the proliferation and maturation of EPCs in rats with type 2 diabetes mellitus occur optimally in the highest dose and in environments with high NO levels.

CONCLUSIONS

It can be concluded that a high dose of cathecin isolate from GMB-4 clone green tea (60 mg/kgBB) may trigger the proliferation and maturation of EPCs in rats with type 2 diabetes mellitus in an environment with a high level of NO, involving the interaction between SDF-1α and CXCR4 in the aorta.

REFERENCES

Boos, C. J., Lip, G. Y. H. and Blann, A. D. (2006) ‘Circulating Endothelial Cells in Cardiovascular Disease’, *Journal of the American College of Cardiology*, 48(8), pp. 1538–1547.

Brandes, R. P., Fleming, I. and Busse, R. (2005) ‘Endothelial aging’, *Cardiovascular Research*, 66(2), pp. 286–294. doi: 10.1016/j.cardiores.2004.12.027.

Chen, L. *et al.* (2010) ‘CXCR4 gene transfer contributes to in vivo reendothelialization capacity of endothelial progenitor cells’, *Cardiovascular Research*, 88(3), pp. 462–470.

Christopherson, K. W. (2003) ‘Cell surface peptidase CD26/DPPIV mediates G-CSF mobilization of mouse progenitor cells’, *Blood*, 101(>12), pp. 4680–4686.

Fadini, G. P. *et al.* (2006) ‘Diabetes impairs progenitor cell mobilisation after hindlimb ischaemia-reperfusion injury in rats’, *Diabetologia*, 49(12), pp. 3075–3084.

Fadini, G. P. *et al.* (2006) ‘Number and function of endothelial progenitor cells as a marker of severity for diabetic vasculopathy’, *Arteriosclerosis, Thrombosis, and Vascular Biology*, 26(9), pp. 2140–2146.

Gallagher, K. A. *et al.* (2007) ‘Diabetic impairments in NO-mediated endothelial progenitor cell mobilization and homing are reversed

by hyperoxia and SDF-1??', *Journal of Clinical Investigation*, 117(5), pp. 1249–1259.

Gian Paolo Fadini, Saverio Sartore, C. A. and A. A. (2007) 'Significance of Endothelial Progenitor Cells', *Diabetes Care*, 30(5), pp. 1305–1313.

Gill, M. *et al.* (2001) 'Vascular Trauma Induces Rapid but Transient Mobilization of VEGFR2+AC133+ Endothelial Precursor Cells', *Circulation Research*, 88(2), pp. 167–174.

Leone, A. M. *et al.* (2009) 'From bone marrow to the arterial wall: The ongoing tale of endothelial progenitor cells', *European Heart Journal*, 30(8), pp. 890–899.

Liles, W. C. *et al.* (2003) 'Brief report Mobilization of hematopoietic progenitor cells in healthy volunteers by AMD3100 , a CXCR4 antagonist', *October*, 102(8), pp. 2728–2730.

Mawarti, H., Ratnawati, R. and Lyrawati, D. (2012) 'Epigallocatechin Gallate Menghambat Resistensi Insulin pada Tikus dengan Diet Tinggi Lemak Inhibitory Effect of Epigallocatechin Gallate on Insulin Resistance in Rat with High Fat Diet', *Jurnal Kedokteran Brawijaya*, 27(1), pp. 43–50.

Peristiowati, Y., Indasah, I. and Ratnawati, R. (2015) 'The effects of catechin isolated from green tea GMB-4 on NADPH and nitric oxide levels in endothelial cells exposed to high glucose.', *Journal of intercultural ethnopharmacology*, 4(2), pp. 114–7. doi: 10.5455/jice.20141224104135.

Schmidt-Lucke, C. *et al.* (2005) 'Reduced number of circulating endothelial progenitor cells predicts future cardiovascular events: Proof of concept for the clinical importance of endogenous vascular repair', *Circulation*, 111(22), pp. 2981–2987.

Susanti, E., Rudijanto, A. and Ratnawati, R. (2012) 'Catechins inhibit atherosclerosis in male rats on a high fat diet', 31(2), pp. 81–87.

Tang, Z.-H., Fang, Z. and Zhou, L. (2013) 'Human genetics of diabetic vascular complications', *Journal of Genetics*, 92(3), pp. 677–694.

Tikhonenko, M. *et al.* (2013) 'N-3 Polyunsaturated Fatty Acids Prevent Diabetic Retinopathy by Inhibition of Retinal Vascular Damage and Enhanced Endothelial Progenitor Cell Reparative Function', *PLoS ONE*, 8(1), pp. 1–10. doi: 10.1371/journal.pone.0055177.

Urbich, C. and Dimmeler, S. (2004) 'Endothelial progenitor cells: Characterization and role in vascular biology', *Circulation Research*, 95(4), pp. 343–353. doi: 10.1161/01.RES.0000137877.89448.78.

Vanhoutte, P. M. (2003) 'Endothelial control of vasomotor function: from health to coronary disease.', *Circulation journal : official journal of the Japanese Circulation Society*, 67(July), pp. 572–575.

Wardhana, A. W., Ratnawati, R. and Suyuti, H. (2013) 'Isolat EGCG Teh Hijau Klon GMB4 Menurunkan Ekspresi Protein Faktor Transkripsi C / EBP α dan Kadar Leptin pada Kultur Sel Preadiposit Visceral Tikus', *Jurnal Kedokteran Brawijaya*, 27(4), pp. 212–216.

A COMPARATIVE STUDY OF THE EFFECTS OF VIBRATION AND ELECTRICAL STIMULATION THERAPIES ON THE ACCELERATION OF WOUND HEALING IN DIABETIC ULCERS

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ABSTRACT

Introduction: Diabetic ulcers accompanied by ischemia is difficult to treat. Such ulcers require therapy that can improve the blood flow. Previous studies have revealed that two therapies could improve blood flow and accelerate the healing of diabetic ulcers; vibration and electrical stimulation (ES). However, it is unknown which of these two therapies is best at accelerating wound healing in diabetic ulcers. The purpose of this study was to compare both therapies in relation to accelerating the wound healing of diabetic ulcers. **Methods:** This study was an experimental study involving diabetic rats. The rats were divided into two groups: vibration and ES. Vibration and ES were applied for 10 minutes per day for 7 days. Wound size, inflammation, intensity of fibroblast infiltration, area of necrosis and degree of re-epithelialisation were compared. The difference in wound size was analysed using an independent t-test, while the histological data were analysed using a Mann-Whitney U-test. **Results:** On day 5 onwards, there was a thin slough in the ES group which was not present in the vibration group. Day 4 onwards and the wound size was significantly smaller in the vibration group than in the ES group. The intensity of inflammation was significantly less, and the degree of fibroblast infiltration was significantly higher in the vibration group compared with the ES group. Re-epithelialisation was more advanced in the vibration group than the ES group. **Conclusions:** Our study revealed that wound healing in diabetic ulcers following vibration was better than after ES. We suggest that nurses should use vibration rather than ES in clinical settings.

Keywords: complementary therapy, diabetic ulcer, electrical stimulation, vibration, wound healing

INTRODUCTION

Indonesia has the tenth highest proportion of people with diabetes mellitus (DM) in the world (Shaw, Sicree and Zimmet, 2010). It is predicted that Indonesia will become number six by 2030 (Shaw, Sicree and Zimmet, 2010). Soewondo, Ferrario and Tahapary (2013) revealed that the prevalence of patients with DM in Indonesia had increased by 11 % over 19 years, although this figure is likely to be higher since there are many unreported cases (Yusuf *et al.*, 2016).

Diabetes mellitus causes many complications. Patients have a risk of limb amputation at a rate that is 40 times higher than people without DM (Brechow *et al.*, 2013). After amputation, patients with DM also have a higher risk of limb re-amputation and rate of mortality (Moulik, Mtonga and Gill, 2003; Izumi *et al.*, 2006). Armstrong, Wrobel and Robbins (2007) showed that the prevalence of deaths due to diabetic foot ischemia was higher than that due to cancer.

Considering the impact of diabetic ulcers on patients, a therapy that accelerates wound healing is urgently required. Wu *et al.*, 2007 revealed that diabetic ulcers that heal with difficulty are accompanied by impaired blood flow (ischemia).

The presence of ischemia impairs the wound healing process, especially the angiogenetic phase, thus a therapy that improves blood flow would be of great benefit, including the use of drugs which act as vasodilators that improve blood flow or induce angiogenesis such as prostaglandins or basic fibroblast growth factor (Addison *et al.*, 1972; Lees, 1994). However, the continuous administration of these drugs causes side effects such as cramping, the vasoconstriction of blood vessels and the acceleration of osteogenesis (Nagase *et al.*, 2007). Because most patients with diabetic foot ulcers also have other complications due to high blood glucose, a therapy that has minimal side effects is not invasive and is comfortable for patients is required.

Previous studies have shown that two complementary therapies that are safe for application to patients are vibration and electrical stimulation (ES). A previous study revealed that a low vibration frequency can improve blood flow (Nakagami *et al.*, 2007), and accelerate healing of stage I pressure ulcers (Arashi *et al.*, 2010), deep tissue injury

(Sari, *et al.*, 2015) and diabetic ulcers (Sari, Sutrisna and Hartono, 2016). Sari *et al.*, (2015) revealed that the reduction of hypoxia and reduction of activation of matrix metallo-proteinase-2 and matrix metalloproteinase-9 are the mechanisms that are responsible for the acceleration of wound healing following vibration.

Studies reveal that ES has been utilised for many health purposes because it can improve blood flow. Humans create a type of electricity called bioelectricity. Following an injury to the skin, a low current flows between the skin and underlying tissue, which is called the current of injury. This is important during the wound healing process (Kim, Cho and Lee, 2014). The electric current which is used in ES is a low current (microAmpere, µA).

Thus, the low current of ES therapy reflects the bioelectric current created by the body (Ud-Din and Bayat, 2014) . Results of studies both *in vitro* and *in vivo* reveal that ES improves the healing process by promoting keratinocyte migration, improving wound perfusion, stimulating collagen synthesis (Kim, Cho and Lee, 2014), and inducing angiogenesis (Liebano and Machado, 2014). (Liebano and Machado, 2014). A previous *in vitro* study revealed that ES could also reduce inflammation (Cho *et al.*, 2000). In results similar to the effect of vibration, previous studies have also shown that ES accelerates wound healing in pressure, ischemic and diabetic ulcers (Eriksson *et al.*, 1981; Goldman *et al.*, 2003; Koel and Houghton, 2014).

Based on the above studies, both vibration and ES could improve wound healing. However, up to the present, there is no study that compares the effectiveness of the two complementary therapies, therefore, which therapy is better for accelerating wound healing of diabetic ulcer is still unknown.

MATERIALS AND METHODS

Research Design

This was an experimental study utilising post-test only, using a control group design approach.

Electrical Stimulation Device (Figure 1)

Electrical stimulation consisted of two main parts, the electrodes and power supply. The electrodes served as a distributor of electrical current to the skin and were constructed from corrosion-resistant metal that could easily be attached to the skin. The power supply provided electric current to both electrodes. The current generated was a square wave of electrical pulses whose amplitude and frequency could be varied (Sari, Sutrisna and Hartono, 2017).

The electrodes were attached to the skin as shown in Figure 2. Based on previous research, ES was applied for 10 minutes every day for 7 days (20 Hz, 320 µs, 50 µA) (Sari, Sutrisna and Hartono, 2017).

1. Electrical stimulation device

Figure 2. The application of ES in rat skin

Figure 3. Rat was placed on the vibrating device. The wound is at the centre of the vibrating device.

Vibration Device

The vibration device which was used in this study was originally constructed by our research team (Sari, Sutrisna and Hartono, 2016). In brief, the vibration bed consisted of 3 vibrating motors and its frequency can be varied by changing the velocity. The application of the use of vibration bed for the rat can be seen in Figure 3. The rats were given an application of vibration for 10 minutes once a day for 7 days.

Animal

This study used male Wistar rats aged 12-14 weeks. The rat's body weight was in the range of 190-220 grams. The rats had free access to food and drink. The protocol of this study was approved by the research committee ethics for an animal study, of the Faculty of Medicine, Jenderal Soedirman University (1208/KEPK/III/2017).

The rats were divided into two groups, vibration-treated and electrical stimulation-treated. Every day, the wounds were washed with saline in both groups prior to being covered with a film dressing.

Induction of Rats

The rats were acclimatised for 7 days before the induction of diabetes by injection of Alloxan Monohydrate (Sigma Aldrich, USA) at a dose of 90 mg/kg. Blood was drawn from the tail vein 4 days after induction to assess whether the blood glucose concentration had increased. The rats were considered diabetic when their blood glucose was greater than 250 mg/dl. The rats were shaved the day prior to wounding. The rats were anesthetised with Ketamile (25-30 mg/kg body weight) during the shaving and wounding procedures.
The procedure of wounding was according to the previous publication (Sari *et al.*, 2015a) The diameter of each wound was 1 cm, extending to the *Panniculus carnosus*. The wounds were cleaned with normal saline, dried with gauze then covered with a parafilm dressing. The wound was monitored daily from day 0 to 7 and recorded with a digital camera.

Tissue Staining

The rats were sacrificed on day 7 using an overdose of ketamile. The tissue samples were fixed in 10% formalin then processed and embedded into paraffin. The samples were sectioned and then stained with a hematoxylin and eosin (H&E). Sections were observed using a light microscope. The inflammation and infiltration of inflammatory cells were indicated by blue staining in the H&E sections.

Wound Size

The size of the wound was measured by using ImageJ software from the National Health Institute. The wound area was determined based on the inner wound margins (Ueda *et al.*, 2010) The relative wound areas were determined as (day n area – day 0 area) / (day 0 area). (Ueda *et al.*, 2010)

Reepithelialisation

Reepithelialisation was indicated by the presence of new epithelial tissue in the epidermis layer. Reepithelialisation was observed with a light microscope. The result of the study was described qualitatively.

Statistical Analysis

Statistical analysis was performed by SPSS software, version 16. The data of the wound size was analysed by an independent t-test. The histological result was analysed by a Mann-Whitney U-test. The value of $p < 0,05$ was considered to be significant.

RESULTS

The result of the macroscopical findings could be seen in Figure 4. On day 0, the visual appearance of the wound was similar in both groups. On day 1 to day 3, the wound base in both groups started to be filled with granulation tissue. On day 3, the wound size in the vibration group tended to be smaller

Table 1. Intensity of inflammation and fibroblast between vibration and ES group

Groups	PMNs	Fibroblas
Vibration	2*	3*
Electrical stimulation	3	2

Values indicated median score
Rating scale : 0 = absent, 1= occasional, 2 = moderate, 3 = abundant, >3 = very abundant
* P< 0.05
PMNs = polymorphonuclear neutrophils

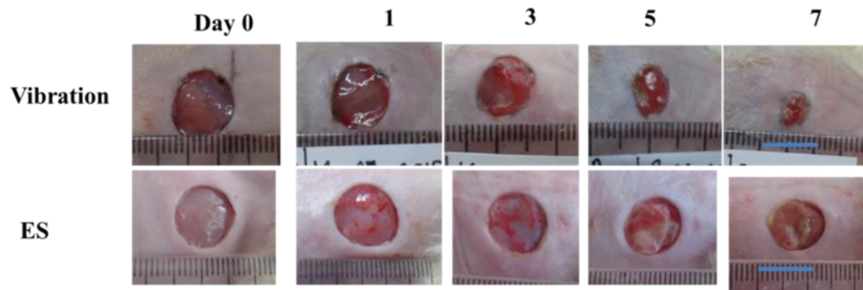

Figure 4. Macroscopical findings of the wounds treated with vibration (upper picture) and Electrical stimulation (lower picture) (bar = 1 cm)

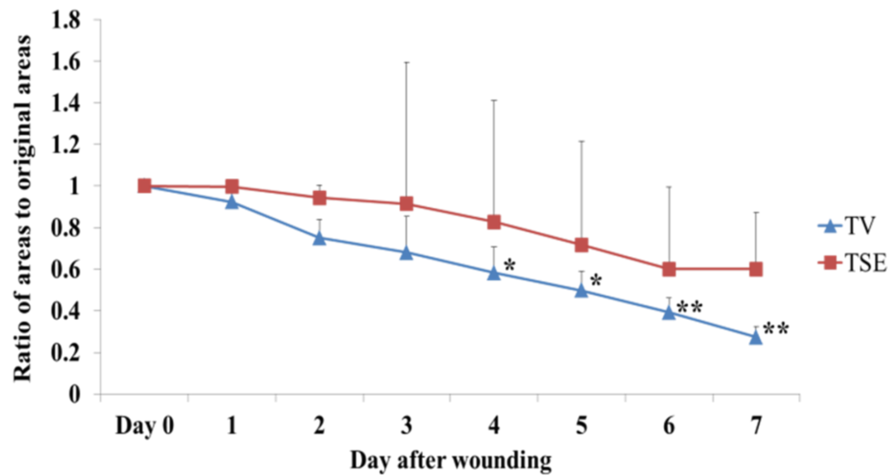

Figure 5. The comparison of the wound size between the wounds treated with vibration and electrical stimulation (* P< 0.05, **P< 0.01)

compared with the ES group. On day 5, the granulation tissue in both groups was increased. However, there was a thin layer of slough in the ES group, which was not present in vibration group. On day 7, the thin layer of the slough was still present in the ES group.

The difference of the wound size between two groups could be seen in Figure 5. There was no significant difference in wound size between vibration therapy and ES from day 0 to day 3. However, the wound size in the vibration group was significantly smaller than in the ES group on day 4 to day 7 (P=0,011 on day 4, P=0.025 on day 5, P=0.005 on day 6, P=0.0001 on day 7).

The microscopical difference between the vibration and ES group in the epidermis and dermis layers can be seen in Figure 6. The intensity of inflammation in both the epidermis and dermis layer in the vibration group was less compared to the inflammation in the ES group. The intensity of the fibroblasts was higher in the vibration group than in the ES group. The difference in the histological findings can be seen in Table 1. The intensity of inflammation was significantly less in the vibration compared with the ES group (P=0,034), and the fibroblast intensity was higher in the vibration compared with the ES group (P=0,045).

DISCUSSION

This study is the first study in the literature that compares vibration and electrical stimulation in accelerating the wound healing of diabetic ulcers. In this study, we found that wounds heal better if treated with vibration therapy compared with electrical stimulation.

The previous study revealed that ES could reduce inflammation, improve blood flow, reduce the bacterial burden, reduce pain and edema, decrease muscle spasms, and improve TGF-β1, collagen-I, and muscle

contraction (Demir, Balay and Kirnap, 2004; Sebastian *et al.*, 2011; Kim, Cho and Lee, 2014; Torkaman, 2014).

Recent research by the author has shown that compared with the standard treatment, wounds treated with ES showed a reduction in inflammation and an increase in re-epithelialisation (Sari, Sutrisna and Hartono, 2017). A reduction in inflammation following ES in diabetic ulcers might be due to the ability of ES to enhance phagocytosis (Cho *et al.*, 2000). The improvement of reepithelialization might be due to the ability of ES to promote keratinocyte migration (Kim, Cho and Lee, 2014).

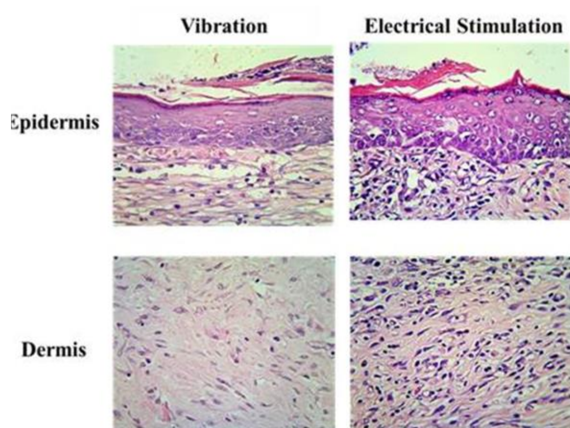

Figure 6. The histological findings of the epidermis and dermis layer between the vibration and ES groups. Hematoxylin and Eosyn staining in the epidermis layer (upper part) and dermis (lower part) between vibration and electrical stimulation (magnification of 400X)

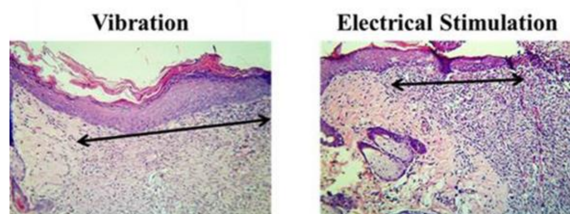

Figure 7. Re-epithelialisation between the vibration and ES group. Re-epithelialisation was longer in the vibration group than in electrical stimulation group (arrow line indicates length of reepithelialisation, magnification of 100X)

Based on previous studies, vibration could also accelerate the healing of diabetic ulcers, such as in pressure ulcers stage I, deep tissue injuries, and diabetic ulcers (Arashi *et al.*, 2010; Sari, Sanada, *et al.*, 2015; Sari, Sutrisna and Hartono, 2016). Vibration therapy that can accelerate the healing of diabetic ulcer is a vibration which is applied at a low frequency. If the vibration is applied at a high frequency, it will cause tissue damage (Sari, Sutrisna and Hartono, 2016). A high frequency of vibration might cause an excessive increase of reactive oxygen species and nitric oxide that causes the vasoconstriction of blood vessels (Hughes *et al.*, 2009).

In this study, the author used a vibration of 40 Hz and ES with a frequency of 20 Hz, pulse width of 320 Hz at a current of 50 μA. These values were chosen after previous studies by the author, and other researchers found that wounds healed using those ranges of frequency and currents (Torkaman, 2014; Sari, Sutrisna and Hartono, 2017). The previous study revealed that a vibration below 50 Hz could accelerate the wound healing of chronic ulcers (Arashi *et al.*, 2010; Sari, *et al.*, 2015). The author investigated a vibration frequency range and determined that a frequency of 40 Hz accelerated the healing of diabetic ulcers (Sari, Sutrisna and Hartono, 2016). In relation to ES, the author also found that the frequency of 20 Hz, the pulse width of 320 Hz and a current of 20 μA could accelerate the healing of diabetic ulcers (Sari, Sutrisna and Hartono, 2017).

In this study, we found that wound healing in diabetic ulcers using vibration was better than using ES. The wound sizes were smaller when treated with vibration and showed a greater reduction in inflammation compared with the wounds treated using ES. However, the mechanism for this difference remains unknown. In this study, the vibration was experienced by the entire body, and so it is possible that blood flow might increase systemically and not only to the wound area. However, blood flow is likely to increase only in the wound area during ES, since the electrodes were placed directly on the wound. In patients with DM, increased blood flow around the body is important since high blood glucose frequently causes plaque that can result in impaired blood flow. Another study is needed to elucidate the mechanism as to why

the wound healed better in vibration compared with in ES.

In this study, all of the animals with diabetic ulcers survived during the observation of wound healing. However, ES can sometimes cause skin tearing. It is, therefore, reasonable to suggest that vibration therapy is safer than ES.

The results of this study are very important since it is the first study that establishes that vibration accelerates wound healing in diabetic ulcers to a greater extent than ES. Nurses should consider using complementary therapies such as vibration to accelerate the healing of diabetic ulcers instead of using ES.

CONCLUSIONS

This study is the first study in the literature to investigate the comparison of the effect of vibration therapy and electrical stimulation therapy in accelerating the wound healing of diabetic ulcers. In this study, we revealed that wounds treated with vibration therapy healed better than by ES therapy.

Besides, this is the first study in the literature that compares the effect of vibration therapy with electrical stimulation therapy in relation to the wound healing of diabetic ulcers. We have demonstrated that the wounds treated with vibration therapy healed better than by ES therapy, and so we suggest that nurses in clinical settings use complementary vibration therapy instead of ES when treating wounds.
In this study, we used animals since we wanted to investigate the healing of the wounds in diabetic ulcers in deep tissue. In the future, we will compare the effects of vibration and ES in human subjects.

Acknowledgment

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REFERENCES

Addison, G. M. *et al.* (1972) 'Prostaglandin E1 in severe', pp. 155–156.

Arashi, M. *et al.* (2010) 'Vibration therapy accelerates healing of Stage I pressure ulcers in older adult patients', *Advances in skin & wound care*, 23(7), pp. 321–327. doi: 10.1097/01.ASW.0000383752.39220.fb.

Armstrong, D. G., Wrobel, J. and Robbins, J. M. (2007) 'Guest editorial: Are diabetes-related wounds and amputations worse than cancer?', *International Wound Journal*, 4(4), pp. 286–287. doi: 10.1111/j.1742-481X.2007.00392.x.

Brechow, A. *et al.* (2013) 'Improving major amputation rates in the multicomplex diabetic foot patient: focus on the severity of peripheral arterial disease', *Therapeutic Advances in Endocrinology and Metabolism*, 4(3), pp. 83–94. doi: 10.1177/2042018813489719.

V C Lees, T. P. D. F. (1994) 'A freeze-injured skin graft model for the quantitative study of basic fibroblast growth factor and other promoters of angiogenesis in wound healing', *Br J Plast Surg*, 47, pp. 349–359.

Cho, M. R. *et al.* (2000) 'Integrin-dependent human macrophage migration induced by oscillatory electrical stimulation.', *Annals of biomedical engineering*, 28(3), pp. 234–43. doi: 10.1114/1.263.

Demir, H., Balay, H. and Kirnap, M. (2004) 'A comparative study of the effects of electrical stimulation and laser treatment on experimental wound healing in rats.', *Journal of rehabilitation research and development*, 41(2), pp. 147–54. doi: 10.1682/JRRD.2004.02.0147.

Eriksson, E. *et al.* (1981) 'Effect of electrical stimulation on human skeletal muscle.', *International journal of sports medicine*, 2(1), pp. 18–22. doi: 10.1055/s-2008-1034578.

Goldman, R. *et al.* (2003) 'Electrotherapy promotes healing and microcirculation of infrapopliteal ischemic wounds: a prospective pilot study.', *Advances in skin & wound care*, 17(6), pp. 284–294. doi: 10.1097/00129334-200407000-00010.

Hughes, J. M. *et al.* (2009) 'Increased oxidant activity mediates vascular

dysfunction in vibration injury.', *The Journal of pharmacology and experimental therapeutics*, 328(1), pp. 223–30. doi: 10.1016/S0749-4041(09)79206-1.

Izumi, Y. *et al.* (2006) 'Risk of reamputation in diabetic patients stratified by limb and level of amputation: A 10-year observation', *Diabetes Care*, 29(3), pp. 566–570. doi: 10.2337/diacare.29.03.06.dc05-1992.

Kim, T. H., Cho, H. and Lee, S. M. (2014) 'High-Voltage Pulsed Current Stimulation Enhances Wound Healing in Diabetic Rats by Restoring the Expression of Collagen, α-Smooth Muscle Actin, and TGF-β1', *The Tohoku Journal of Experimental Medicine*, 234(1), pp. 1–6. doi: 10.1620/tjem.234.1.

Koel, G. and Houghton, P. E. (2014) 'Electrostimulation: Current Status, Strength of Evidence Guidelines, and Meta-Analysis', *Advances in Wound Care*, 3(2), pp. 118–126. doi: 10.1089/wound.2013.0448.

Liebano, R. E. and Machado, A. F. P. (2014) 'Vascular Endothelial Growth Factor Release Following Electrical Stimulation in Human Subjects.', *Advances in wound care*, 3(2), pp. 98–103. doi: 10.1089/wound.2013.0427.

Moulik, P. K., Mtonga, R. and Gill, G. V. (2003) 'Amputation and mortality in new-onset diabetic foot ulcers stratified by etiology', *Diabetes Care*, 26(2), pp. 491–494. doi: 10.2337/diacare.26.2.491.

Nagase, T. *et al.* (2007) 'Heterotopic ossification in the sacral pressure ulcer treated with basic fibroblast growth factor: coincidence or side effect?', *Journal of Plastic, Reconstructive & Aesthetic Surgery*, 60(3), pp. 327–329. doi: 10.1016/j.bjps.2005.11.043.

Nakagami, G. *et al.* (2007) 'Effect of vibration on skin blood flow in an in vivo microcirculatory model', *BioScience Trends*, 1(3), pp. 161–166.

Sari, Y., Saryono, *et al.* (2015) 'Modifikasi Pompa ASI Sebagai Terapi Luka Bertekanan Negatif Untuk Mempercepat Penyembuhan Luka Diabetes', 10(1), pp. 104–111.

Sari, Y., Sanada, H., *et al.* (2015) 'Vibration inhibits deterioration in rat deep-tissue injury through HIF1-MMP axis', *Wound Repair and Regeneration*, 23(3), pp. 386–393. doi: 10.1111/wrr.12286.

Sari, Y., Sutrisna, E. and Hartono (2016) 'Pengaruh Frekuensi Vibrasi terhadap Penyembuhan Luka Diabetes The Provision of Different Vibration Frequency to Accelerate Diabetic Wound Healing', *Jurnal Keperawatan Padjajaran*, 4, pp. 117–126.

Sari, Y., Sutrisna, E. and Hartono (2017) 'The Effect of Electrical Stimulation on Promoting Wound Healing in Diabetic Ulcer', in *The 3rd International Conference on Nursing (ICON) 2017*. Malang, Indonesia.

Sebastian, A. *et al.* (2011) 'Acceleration of cutaneous healing by electrical stimulation: Degenerate electrical waveform down-regulates inflammation, up-regulates angiogenesis and advances remodeling in temporal punch biopsies in a human volunteer study', *Wound Repair and Regeneration*. Mosby, Inc., 19(6), pp. 693–708. doi: 10.1111/j.1524-475X.2011.00736.x.

Shaw, J. E., Sicree, R. A. and Zimmet, P. Z. (2010) 'Global estimates of the prevalence of diabetes for 2010 and 2030', *Diabetes Research and Clinical Practice*, 87(1), pp. 4–14. doi: 10.1016/j.diabres.2009.10.007.

Soewondo, P., Ferrario, A. and Tahapary, D. (2013) 'Challenges in diabetes management in Indonesia: a literature review', *Globalization and Health*, 9(1), p. 63. doi: 10.1186/1744-8603-9-63.

Torkaman, G. (2014) 'Electrical Stimulation of Wound Healing: A Review of Animal Experimental Evidence', *Advances in Wound Care*, 3(2), pp. 202–218. doi: 10.1089/wound.2012.0409.

Ud-Din, S. and Bayat, A. (2014) 'Electrical Stimulation and Cutaneous Wound Healing: A Review of Clinical Evidence', *Healthcare*, 2(4), pp. 445–467. doi:

10.3390/healthcare2040445.

Ueda, K. *et al.* (2010) 'A possible animal model for critical colonisation.', *Journal of wound care*, 19(7), pp. 295–300.

Wu, S. C. *et al.* (2007) 'Foot ulcers in the diabetic patient, prevention and treatment', *Vascular Health and Risk Management*, 3(1), pp. 65–76. doi: 10.3310/hta13540.

Yusuf, S. *et al.* (2016) 'Prevalence and Risk Factor of Diabetic Foot Ulcers in a Regional Hospital , Eastern Indonesia', *Open Journal of Nursing*, 6(January), pp. 1–10. doi: 10.4236/ojn.2016.61001.

ANALYSIS OF THE ASSOCIATED FACTORS OF BOARDING TIME IN YELLOW ZONE PATIENTS IN EMERGENCY DEPARTMENT

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ABSTRACT

Introduction: Patient's visits to the emergency room increase in number every year. The increasing number of hospital visits is directly associated with the increasing number of patients who wait in the emergency department. The yellow zone is a part of the emergency room that has become a place for the most increased patients to enter. This situation causes boarding time patient longer than usual. The aim of this research was to analyse the various factors that have been associated with boarding time in the yellow zone emergency department. **Methods:** This research was an analytic observational study with a cross-sectional approach. The number of samples was 78 respondents who were recruited with a non-probability sampling technique. The univariate and bivariate analysis was utilized to test the relationship between the variables. A further statistical test was conducted with linear regression to understand the most dominant factor. **Results:** The results showed a significant relationship between transfer time, laboratory turnaround time, diagnostic time, time arrival, insurance coverage, ratio nurse and patient and boarding time. Furthermore, multivariate analysis with linear regression showed a significant association between transfer time, laboratory turns around, and the ratio of nurses to patients with the boarding time. **Conclusions:** The findings from this study show that patient boarding time in the yellow zone should consider several factors. This research provides the output of the initial data as one of the basic considerations for service management and team minimum service standards in hospitals.

Keywords: boarding time, emergency department, yellow zone

INTRODUCTION

The visitation of patients in the Emergency Department (ED) is growing every year. The increase of this situation is by about 30% in hospitals around the world (Bashkin *et al.*, 2015). Increasing the number of hospital visits clearly affects the increasing number of patients who enter the emergency room. The emergency room unit is an area located in the hospital that is used to perform standard emergency, acute and urgent care (Geelhoed and de Klerk, 2012). Caring in the emergency phase is used to stabilize patients who have disorders from injuries and other sources that require resuscitation and patients who have a certain degree of injury and illness (Australian College for Emergency Medicine, 2015). The data entry of patients who come into the ED in Indonesia is approximately 4,402,205 patients or 13.3% of all visits to hospitals (MoH, 2015). Data for the ED patients who visited the emergency room in East Java in 2014 amounted to 8,201,606 cases. Looking at the district level, the data of the visits in Tulungagung in 2014 was 29,877 cases (Dinkes Provinsi Jatim, 2015).

The patient condition who wait too long in the ER will hamper the service process in the emergency department. Fast and precise services are most needed in the emergency installation (Ducharme *et al.*, 2008). The length of time patients in the yellow zone could be due to a mismatch between the number of patients, patient beds and the number of health personnel. An excessive number of patients causes in increased check-up time for other patients, increased waiting time, and prolonged waiting time for returning patients, and patients who will be hospitalized. This condition is called boarding time (Singer *et al.*, 2011). Quality Control Standard of RSUD Dr. Iskak Tulungagung explained that the patient waiting period after the inpatient decision becomes one of the indicators of hospital quality control. So this research focuses on it, as a further hospital evaluation material.

The number of patients per day in the yellow zone can reach 36 patients per day, coming in during the morning, day and night shift. The number of beds in the yellow zone in the ED room is 9 beds with the total number of nurses in the yellow zone being 21 people divided into 5 people per shift. The number of patients boarding for more than 6 hours per day can reach 10 patients. The results of the interview with the team leader in the yellow zone can help to identify the causes of boarding due to the number of limited resources, not being well organised, the results of the laboratory requiring a lot of time, the time to diagnose the disease being longer than usual, the

Table 1. Demographic characteristic of the respondents

		n	%
Gender	Men	43	55.1
	Women	35	44.9
Insurance coverage	General	43	55.1
	BPJS	30	38.8
	Jasa Raharja	5	6.4
Number patient	Mean		16
	Min-max		9-28
Age	Mean		52.4
	Min-max		13-76

Table 2. Result of the bivariate analysis

Variable	Test	p-value	r
Boarding Time-Transfer Time	Pearson	0.000	0,747
Boarding Time-Laboratory Turn-around Time	Pearson	0.000	0,693
Boarding Time-Diagnostic Time	Pearson	0.000	0,462
Boarding Time-Time of arrival	Spearman	0.263	-0,128
Boarding Time-Insurance Coverage	Spearman	0.980	-0,003
Boarding Time-Ratio between nurse-patient	Spearman	0.000	-0,638

Table 3. Multivariate analysis among the variables

	β	SE	t	p	F	Adj R2
Boarding time					16.342	.134
Transfer time	-.300	212.157	-3.784	.000		
Laboratory turnaround time	.452	.199	4.367	.000		
Diagnostic time	.129	.153	1.207	.231		
Ratio nurse and patient	.155	1.136	2.163	.034		

number of patients who came in on the day shift being more than in other shifts, and the bed occupancy time for patients from the ED becoming a factor that causes the boarding time to be longer than usual. The speed of patient care in the Emergency Department can determine the prognosis of the next patient, and obtain optimal results in the care of the patient. The aim of this research was to analyse the various factors that have been associated with boarding time in the yellow zone emergency department.

MATERIALS AND METHODS

This research used a cross-sectional study approach. The aim of this study was to identify the determinants factors related to health-related events and problems. Data collection was taken from June to July 2017, and this research was conducted at the Emergency Unit of the RSUD Dr. Iskak Tulungagung. The population of this study was the patients who came to the yellow zone emergency room; 1,080 patients per month. The sampling technique used non-probability sampling which used the rule of thumb with the number of samples, which was 5 to 50 times the number of independent variables (Sastroasmoro and Ismael, 2011). The sample size for this research was 78 respondents. The subjects in this study have inclusion criteria; patients who were in the yellow zone of the ED > 6 hours. The exclusion criteria for this research were patients who were forced to leave the hospital, patients who had not been examined by the doctor and patients who were discharged or referred to another hospital.

This research was conducted by direct observation method using the instrument of data collection sheet and observation guidance sheet

and validated by medical record. We analyzed the dependent and independent variable correlation using bivariate analysis with Spearman test and multivariate analysis with linear regression test. P-value ≤0.05 was considered statistically significant. Statistical analysis was performed under SPSS (Statistical Package for the Social Sciences) 14.0 (SPSS Inc. Chicago, IL, USA).

The study was carried out in accordance with the Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments in humans and approved by the Ethics Committee on Faculty of Medicine, Universitas Brawijaya. Written informed consent was obtained from all study participants.

RESULTS

Distribution of respondent characteristic

The demographic characteristics showed that the respondents were mostly male (55.1%) and the rest female (44.9%). The types of insurance coverage held by the respondents were also identified. Half of the respondents had no insurance (55.1%). The remaining respondents used BPJS (37.5%), and Jasa Raharja (6.4%). The average number of patients coming to the ER was 16 patients per shift, with the minimum number recorded at the time of the shift guard change being 9 patients and the highest number of patients on one shift being 28 patients. The age of the respondents ranged from 13 years old to 76 years old, with the average age of the respondents being 52.4 years (Table 1).

Variable of patient transfer time in RSUD dr Iskak Tulungagung mostly had about 634.55 minutes or 10 hours 57 minutes. Thus, the fastest time was 3 hours 41 minutes and the longest time was 22 hours. The return time of laboratory results was mostly done for 7 hours 9 minutes with the fastest time was 1.8 hours and the longest time is 13.6 hours. Most diagnostic timings were performed for 57.77 minutes with the fastest diagnostic timing being 20 minutes and the longest diagnosis time of 98 minutes. The average value of the waiting time variable of patients after inpatient decision was decided about 909 minutes or 15.15 hours and the lowest patient waiting time after the inpatient decision was 365 minutes or 6 hours and the highest waiting time was 14.22 minutes or 23.7 hours.

In table 2 the variables most closely related to the patient waiting time after the inpatient decision was the patient transfer time (0.747), laboratory return time (0.693) and diagnosis time (0.462). Table 2 explained that there is a significant correlation between the dependent variable (boarding time) with the three independent variables (patient transfer time, laboratory turn-around time and diagnosis time), where the p-value = 0.00. A simple linear regression was calculated to estimate the association between boarding time and the other variables. Table 3 explained that A significant regression equation found that transfer time (beta=-0.30 (212.15), p<0.000), laboratory turnaround time (beta=0.452 (0.199), p<0.000), and the ratio nurse and patient (beta=0.155 (1.136), p<0.034).

In the multivariate test the following equations are obtained:

Y= constanta+a1X1+a2X2...............................+aiXi
Y= 681.212+0.620 (patient transfer time)+2.636 (diagnostic time)-861.011 (comparison of nurses and patients) (see in the discussion below).

DISCUSSION

This study found out that the longer time it takes to order boarding time in the yellow zone, the faster it takes the patient's to move to the room. The boarding time recommended by the hospital is no more than six hours. This is in accordance with research which states that the decision-making process related to medical decisions in Indonesia is determined by culture, where decision-makers related to medical treatment is the oldest member of the family. A similar study conducted by Hodgins *et al.* (2011) mentioned that 41,256 patients treated in the ER during full conditions that resulted in patient boarding time leading to death, decreased by more than 2 hours (Hodgins, Moore and Legere, 2011).

The univariate analysis of the laboratory turnaround time showed that the minimum time for the laboratory results to the ED was 110 minutes and the maximum value was 920 minutes. All patients treated should have laboratory tests carried out related to the

condition experienced by the patient. Prior research in accordance with these results is shown in a study conducted by Steindel & Howanitz (2001) which states that laboratory tests were performed in > 50% of patients visiting the ER and who were hospitalized, including those who were discharged (Steindel and Howanitz, 2001). The return time of the laboratory results is the period of time from the physician's order for a blood test until the results arrive at the ER, with a target time of <60 minutes (Hawkins, 2007).

The study found that both variables also have a strong relationship with positive value. It means that the longer the diagnosis time is raised to, then the boarding time of the patient in the yellow zone will be longer, and vice versa when the diagnostic time is faster, then the patient waiting time in the yellow zone of the ED will be shorter as well. This is in accordance with the research put forward by Boyle A *et al.*, (2012), stating that the delay of diagnosis is defined as the time from the patient arriving up until the medical diagnosis arises(Boyle *et al.*, 2012). This variable also enters the framework described by (Rabin *et al.*, 2012), which is where this variable enters the throughput factor component in the described framework overcrowding model.

The result of the bivariate test using a Spearman test on arrival time with boarding time showed no statistical significance. Differences in the results of the study as revealed by Powell *et al.*, (2012) are where the study explains that the arrival time during the day has the possibility of patient waiting time after the decision of hospitalisation being higher(Powell *et al.*, 2012). Bashkin *et al.* (2015) in his study also explained the related matters where he found the result that 52% of patients enter the ED in the morning shift and 48% are divided into the day shift and night shift. The difference in this result is probably due to the homogenized sample size of the subject so that the variable has no significant relationship in relation to each shift. Another thing that can cause the absence of a relationship between the variable of arrival time and boarding time is the number of patients experiencing boarding time on each shift.

The result of the bivariate test analysis shows that there is no close relationship between the insurance ownership variable with patient boarding time. Differences occurred when this result was compared with the research conducted by Kennedy *et al.* (2004), where in his research described that in about 7.7% of the number of visits during the 12 months, there was a delay or a delay in the services in ER (Kennedy *et al.*, 2004). This occurs due to problems such as service charges which are swollen, and insurance coverage will also cause delayed service, causing the patient's boarding time to increase. In this study, another thing that also became an obstacle was if the patient did not have health insurance. Patients who already have health insurance do not have to bother giving their data forward, saving time.

This study found out that there was a strong correlation between the ratio of the nurses to the patients with the patient boarding time in which the direction of the relationship is negative. This means that when the ratio of nurses with patients per shift is greater, then the patient boarding time is smaller, and vice versa if the ratio of nurses with patients per shift is smaller then the patient waiting time value after the decision of becoming an inpatient is longer. A study described by Wiler *et al.*, (2012) explains how the ratio of nurses with patients on each shift becomes a thing that can affect the duration of service time and the workload of the nurses also increases(Wiler *et al.*, 2012). These results are in accordance with the journal articles published by Zarea (2014) in Iran, mentioning that 78.2% of nurses are not satisfied with their performance due to the increased workload, safety and salary (Zarea *et al.*, 2014).

Based on the results of the multivariable analysis, where this research used linear regression to predict patient boarding time in the yellow zone, there were the variables of patient transfer time, laboratory turnaround time, diagnostic time and the comparison of nurses with patients per shift. Transfer time, diagnostic time and the proportion of the number of nurses with the patients became the significant factors of the patient's boarding time. This is because long diagnostic timing can lead to long transfer times since transfer decisions are decided when diagnoses are raised. This can be seen from the length of time of diagnosis and the length of

transfer time. This finding is in accordance with the research described by Lo *et al.* (2014).

Based on the result above (the equations of the multivariate test) indicates that any delay in transferring the patient to an inpatient room within 60 minutes will increase the patient's boarding time by as much as 0.620 minutes in a patient with a strong correlation strength. This is due to the limitations of the treatment room, where it is characterised by a significant number of patients and a BOR of 75%. These results indicate that bed utilisation in the inpatient wards is higher than the national standard of 60%. This will certainly affect the duration of the patient's boarding time in the ER. With this equation model, it can estimate patient boarding time using the variable time of patient transfer, time of diagnosis determination and ratio of a nurse. The meaning of constant value is that if there is no trust value or variable value, then the participation value is equal to 681.212 minutes. For the variable time of patient transfer, for every addition of 1 minute then there will be an addition of 0,620 minutes. For the variable of the determination time of each diagnosis, there is the addition of 1 minute with an addition of 2,636 minutes. For the nurse comparison variables with patients, the number per guard must be calculated in advance of the number of nurses in one shift then divided by the number of patients in one shift. The bigger the ratio of nurses with patients per shift, is the p-value or waiting time of the patient and whether or not the hospitalisation decision will be smaller.

The results of this study obtained information about the factors relating to patient boarding time in the yellow zone. The limitations in this study are that the researchers only look at the time when the patient was in the ER without considering the amount of space taken and the type of illness that the patient suffers from, so the researchers cannot see which room is used the most to move patients. Another limitation of this research is that the researcher only conducted research in one hospital only, so this research should go on to take time elsewhere with the same characteristics to be able to see the boarding time of patients in the yellow zone in other hospitals.

CONCLUSIONS

The comparison factors of nurses with patients per shift, diagnostic time, and transfer time have a significant correlation to patient boarding time in the yellow zone. The benefits of this research are that it has identified multi-factor causes that have a proximity relationship with patient boarding time in the yellow zone, in particular the time factor of patient transfer, the timing of the diagnosis and the comparison of the nurses and number of patients. It provides the output of the initial data as one of the basic considerations for service management and team minimum service standards for hospitals to enable them to improve the quality of their services and strategies that can be used as a basis for quality development.

REFERENCES

Australian College for Emergency Medicine (2015) *Specialist emergency medicine workforce and training activities 2014*. Melbourne: Australian College for Emergency Medicine.

Bashkin, O., Caspi, S., Haligoa, R., Mizrahi, S. and Stalnikowicz, R. (2015) 'Organizational Factors affecting length of stay in the emergency department: initial observational study', *Israel journal of health policy research*. BioMed Central, 4(1), p. 38.

Boyle, J., Jessup, M., Crilly, J., Green, D., Lind, J., Wallis, M., Miller, P. and Fitzgerald, G. (2012) 'Predicting emergency department admissions', *Emerg Med J*. BMJ Publishing Group Ltd and the British Association for Accident & Emergency Medicine, 29(5), pp. 358–365.

Dinkes Provinsi Jatim (2015) *Profil kesehatan Provinsi Jawa Timur Tahun 2014.* Surabaya: Dinkes Provinsi Jatim.

Ducharme J, Tanabe P, Homel P, Miner JR, Chang AK, Lee J & Todd KH. (2008). The influence of triage systems and triage scores on timeliness of ED analgesic administration. *American Journal of Emergency Medicine*, 26 (8), 867-873.

Geelhoed, G. C. and de Klerk, N. H. (2012)

‘Emergency department overcrowding, mortality and the 4-hour rule in Western Australia’, *The Medical Journal of Australia*, 196(2), pp. 122–126.

Hawkins, R. C. (2007) ‘Laboratory turnaround time’, *The Clinical Biochemist Reviews*. The Australian Association of Clinical Biochemists, 28(4), p. 179.

Hodgins, M. J., Moore, N. and Legere, L. (2011) ‘Who is sleeping in our beds? Factors predicting the ED boarding of admitted patients for more than 2 hours’, *Journal of Emergency Nursing*. Elsevier, 37(3), pp. 225–230.

Kennedy, J., Rhodes, K., Walls, C. A. and Asplin, B. R. (2004) ‘Access to emergency care: restricted by long waiting times and cost and coverage concerns’, *Annals of emergency medicine*. Elsevier, 43(5), pp. 567–573.

Lo, S. M., Choi, K. T. Y., Wong, E. M. L., Lee, L. L. Y., Yeung, R. S. D., Chan, J. T. S. and Chair, S. Y. (2014) ‘Effectiveness of Emergency Medicine Wards in reducing length of stay and overcrowding in emergency departments’, *International emergency nursing*. Elsevier, 22(2), pp. 116–120.

MoH (2015) ‘Data dan Informasi Tahun 2014 (Profil Kesehatan Indonesia) [Data and Information in 2014 (Health Profile of Indonesia)]’. Edited by P. D. dan I. Kemenkes. Jakarta: Kemenkes.

Powell, E. S., Khare, R. K., Venkatesh, A. K., Van Roo, B. D., Adams, J. G. and Reinhardt, G. (2012) ‘The relationship between inpatient discharge timing and emergency department boarding’, *The Journal of emergency medicine*. Elsevier, 42(2), pp. 186–196.

Rabin, E., Kocher, K., McClelland, M., Pines, J., Hwang, U., Rathlev, N., Asplin, B., Trueger, N. S. and Weber, E. (2012) ‘Solutions to emergency department “boarding”and crowding are underused and may need to be legislated’, *Health Affairs*. Health Affairs, 31(8), pp. 1757–1766.

Sastroasmoro, S. and Ismael, S. (2011) *Dasar-dasar metodologi penelitian klinis. Sagung Seto, Edisi 4*. ISBN 978-602-8674-54-6.

Singer AJ, Thode HC, Viccellio P & Pines JM. (2011). The association between length of emergency department boarding and mortality. *Academic Emergency Medicine*, 18 (12), 1324-1329.

Steindel, S. J. and Howanitz, P. J. (2001) ‘Physician satisfaction and emergency department laboratory test turnaround time: observations based on College of American Pathologists Q-Probes studies’, *Archives of pathology & laboratory medicine*, 125(7), pp. 863–871.

Wiler, J. L., Handel, D. A., Ginde, A. A., Aronsky, D., Genes, N. G., Hackman, J. L., Hilton, J. A., Hwang, U., Kamali, M. and Pines, J. M. (2012) ‘Predictors of patient length of stay in 9 emergency departments’, *The American journal of emergency medicine*. Elsevier, 30(9), pp. 1860–1864.

Zarea, K., Beiranvand, S., Sheini-Jaberi, P. and Nikbakht-Nasrabadi, A. (2014) ‘Disaster nursing in Iran: Challenges and opportunities’, *Australasian emergency nursing journal*. Elsevier, 17(4), pp. 190–196.

DEVELOPMENT OF LEADERSHIP AND COMMUNICATION SKILL MODEL ON MIDWIFERY STUDENTS IN PHYSIOLOGICAL DELIVERY PRACTICE

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ABSTRACT

Introduction: Currently there is a tendency for students only prioritising hard skills without improving their soft skills. This is indicated by the negative attitudes and actions such as delay task submission, bad time management, and a lack of commitment towards a task. The purpose of this research is to find out the model of leadership skill development and communication skill of the vocational Midwifery course. **Methods:** This study consists of two stages. The research type was observational and explanatory. The first stage used a cross-sectional design and the second stage was quasi-experimental. The subjects of the study for the first stage was 130 respondents, calculated by "rule of the thumb" and by purposive sampling. The second stage consisted of 38 respondents taken by random sampling. The exogenous variables are motivation, self-leadership strategies, job satisfaction, psychological empowerment, self-efficacy, and task commitment. The endogenous variables are leadership skill and communication skills. In the first stage, the data were analysed using PLS and the second stage used a Wilcoxon test with α = 0,05. **Results:** The variables of motivation, self-leadership and job satisfaction could improve communication skills. In stage 2 (after training), all of the variables increased significantly with p <0,05. **Conclusions:** Training using the self-leadership module can improve the ability of motivation, self-leadership strategies, job satisfaction, self-efficacy, psychological empowerment, task commitment, communication and student leadership skills.

Keywords: communication skills, motivation, self-leadership

INTRODUCTION

Education is a major factor in the personal development of humans. Several studies related to soft skills show that Grade Point Average (GPA) can only describe the quality of a person in the cognitive aspect and cannot indicate a person's qualifications in relation to soft skills, also called social skills (Puliam, 2008). Harvard University revealed that the success of one's career is 80% determined by soft skills and only about 20% determined by hard skills. The survey of the National Association of College and Employers (NACE), USA 2002 in (Wanarto, Guntur Budi., 2014) taken by 457 leaders in America showed that out of about 20 important qualities possessed by successful people, the result was mostly soft skills, and only two of them considered it to be hard skills (Kuswara, 2008). Looking at the research results above, demanding education including in relation to midwifery to prepare graduates will mean that they not only have academic achievements with a high GPA score but also have skills ready to use in the world of work.

Besides mastering the academic and technical skills of midwifery, midwifery students must also have communication and leadership skills. The importance of soft skill mastery when the midwife enters the world of work should use the midwifery education institution to design a soft skills development program as a means of building work ethics with the students that is included in the direct learning within the community (Suryani, 2015).

Students, as the next generation of the nation, must have the ability, skills and a personality that is strong and polite. Soft skills are skills that can form a formidable personality. The more soft skills that a person possesses, it is expected that they will have a stronger personality when facing the challenges of the learning process on campus, work challenges, and other life challenges. Soft skills are a person's skill in dealing with others. College graduates expect that the workforce should have positive soft skills, a strong attitude, are honest, passionate, able to work together, polite in communicating, good at negotiating, have a high work motivation, are creative and adaptable, and so are able to work intensively.

"The Lessons from The Top" written by Thomas J. Neff and James M. Citrin (1999) in (Wirawan, 2013) says that the key to success is determined by 90% soft skills and only 10% is determined by hard skills. The Ministry of National Education's study in 2009 states that one's success in education is 85% determined by soft skills.

The Sutomo Midwifery major is one of the educational institutions that implement an educational program with the vision of producing competent midwives who are independent and are able to compete in the

global era, by upholding values and professional ethics. To realise that, the students are required to have both hard skills and soft skills that can be demonstrated by the abilities of the students in relation to leadership skills, communication skills, the ability to interact, to not procrastinate on tasks and many other things. The most recent fact is that the majority of students still limited with just the hard skills that are shown by their academic achievements, with less care given to their soft skills. Observations have found recently that students often (65%) delay on their task completion, and that 70% of students tend to learn only when faced with exams have bad time management and a lack of commitment in performing their duties as a student.

Various steps can be undertaken to improve soft skills such as leadership skills and student communication skills in the practice of physiological midwifery care. The novelty of this research is to create a development model of self-leadership strategies to improve leadership and communication skills. From the previous research, the ability of self-leadership is an important variable in relation to performed improvement measured in quantity. In this research, it is assumed that there are motivational variables that can improve the ability of self-leadership strategies as an effort to improve various positive aspects that impact on the increase of students' soft skills, especially leadership skill and communication skills in the physiological delivery practice (Wanarto, Guntur Budi., 2014).

MATERIALS AND METHODS

This research type is observational and explanatory. The first stage used a cross-sectional design and the second stage used a quasi-experimental approach. The subjects of the study were vocational students of the Dr Sutomo Midwifery course on Surabaya; the first stage consisted of 130 respondents taken by purposive sampling. The second stage sample was 38 respondents taken by random sampling. The exogenous variables were motivation, self-leadership strategies, job satisfaction, psychological empowerment, self-efficacy, and task commitment, while the endogenous variable was communication skill. The instrument used was a questionnaire. The data collection procedure in the first stage began with an explanation of the research objectives and the willingness to become a respondent as evidenced by the provision of informed consent. Furthermore, the respondents were given a questionnaire to explore data about all of the variables. The second stage began with the giving of informed consent. Before the students performed clinical practice, a pre-test on all of the variables was conducted. This was followed by two days training in self-leadership strategies. The control group was not given any training. Both groups then performed physiological midwifery care clinical practice for 1.5 months. After 1.5 months, both groups performed a post-test. The further data obtained was analysed descriptively and inferentially; the first stage using PLS and the second stage using a Wilcoxon test with value $\alpha = 0{,}05$.

RESULTS

The First Stage Results: Analysis of the Structural Models (Inner Model)

In the structural model analysis, the effect of the exogenous factors on the endogenous factors was tested. The reference value used was that if the T-statistical value of the processing was greater than the T-table value, then it was concluded that the exogenous factors have a significant effect on the endogenous factors. Error tolerance (α) = 5% and total data 130 then the value of T-table = $T_{(df=n-1;\alpha/2)} = T_{(129;0,025)} = 1{,}96$. The results of the significance test are described in the following table.

Table1 shows that each exogenous variable has a significant effect on an endogenous variable, except for the job satisfaction variable and leadership skill, task commitment and leadership skill, psychological empowerment and communication skill, psychological empowerment and leadership skill, self-efficacy and communication skill and self-efficacy and leadership skills. Furthermore, the insignificant relationships were omitted. The final model was formed from the new T-statistics value, and the details are in the following table 1.

Table 1. T-Test Result of the Exogenous Latent Variable to the Endogenous variables and Line Coefficient Parameters in the Early Structural Model (Inner Model)

No	Line	Original Sample (O)	T Statistics (|O/STERR|)	T Tabel	Information
1	*(X1) Motivation →(X2) Self leadership strategies*	0.566	21.684	1,96	Significant
2	*(X1) Motivation → (X3) Psychological empowerment*	0.805	36.230	1,96	Significant
3	*(X1) Motivation → (X4) Job Satisfaction*	0.759	31.692	1,96	Significant
4	*(X1) Motivation → (X5) Self efficacy*	0.588	15.661	1,96	Significant
5	*(X1) Motivation → (X6) Task commitment*	0.261	6.106	1,96	Significant
6	*(X1) Motivation → (Y1) Communication skill*	0.274	3.334	1,96	Significant
7	*(X1) Motivation →(Y2) Leadership skill*	0.711	11.212	1,96	Significant
8	*(X2) Self leadership →(X3) Psychological*	0.133	5.001	1,96	Significant
9	*(X2) Self leadership →(X4) Job Satisfaaction*	0.231	7.475	1,96	Significant
10	*(X2) Self leadership → (X5) Self efficacy*	0.214	4.544	1,96	Significant
11	*(X2) Self leadership → (X6) Task commitment*	0.137	6.670	1,96	Significant
12	*(X2) Self leadership →(Y1) Communication skill*	0.173	4.174	1,96	Significant
13	*(X2) Self leadership →(Y2) Leadership skill*	0.337	7.396	1,96	Significant
14	*(X3) Psychological → (X6) Task commitment*	0.135	4.109	1,96	Significant
15..	*(X3) Psychological →(Y1) Communication skill*	-0.020	0.477	1,96	Not Significant
16..	*(X3) Psychological →(Y2) Leadership skill*	-0.053	0.938	1,96	Not Significant
17	*(X4) Job Satisfaaction →X6) Task commitment*	0.306	6.224	1,96	Significant
18	*X4) Job Satisfaaction → (Y1) Communication skill*	0.297	4.808	1,96	Significant
19	*(X4) Job Satisfaaction →(Y2) Leadership skill*	-0.060	0.600	1,96	Not Significant
20	*(X5) Self-efficacy →X6) Task commitment*	0.217	6.824	1,96	Significant
21..	*(X5) Self-efficacy →(Y1) Communication skill*	0.009	0.252	1,96	Not Significant
22..	*(X5) Self-efficacy →(Y2) Leadership skill*	-0.033	0.565	1,96	Not Significant
23	*(X6) Task commitment →(Y1) Communication skill*	0.244	2.968	1,96	Significant
24	*(X6) Task commitment →(Y2) Leadership skill*	-0.075	0.630	1,96	Not Significant

Tabel 2. T-Test Result of the Exogenous Latent Variable to the Endogenous variables and Line Coefficient Parameters in the Finale Structural Model (Inner Model)

No	Line	Original Sample (O)	T Statistics (|O/STERR|)	T Table	Information
1	*(X1) Motivation→(X2) Self leadership strategies*	0.566	23.108	1,96	Significant
2	*(X1) Motivation→ (X3) Psychological empowerment*	0.805	38.621	1,96	Significant
3	*(X1) Motivation→ (X4) Job Satisfaction*	0.759	29.006	1,96	Significant
4	*(X1) Motivation→ (X5) Self efficacy*	0.588	14.551	1,96	Significant
5	*(X1) Motivation→ (X6) Task commitment*	0.262	6.335	1,96	Significant
6	*(X1) Motivation→ (Y1) Communication skill*	0.264	3.898	1,96	Significant
7	*(X1) Motivation→(Y2) Leadership skill*	0.549	19.940	1,96	Significant
8	*(X2) Self leadership →(X3) Psychological*	0.133	5.627	1,96	Significant
9	*(X2) Self leadership →(X4) Job Satisfaaction*	0.231	6.879	1,96	Significant
10	*(X2) Self leadership → (X5) Self efficacy*	0.214	4.499	1,96	Significant
11	*(X2) Self leadership → (X6) Task commitment*	0.136	5.954	1,96	Significant
12	*(X2) Self leadership →(Y1) Communication skill*	0.172	4.180	1,96	Significant
13	*(X2) Self leadership →(Y2) Leadership skill*	0.288	7.249	1,96	Significant
14	*(X3) Psychological → (X6) Task commitment*	0.135	4.103	1,96	Significant
15	*(X4) Job Satisfaaction →X6) Task commitment*	0.306	6.485	1,96	Significant
16	*X4) Job Satisfaaction → (Y1) Communication skill*	0.296	4.427	1,96	Significant
17	*(X5) Self-efficacy →X6) Task commitment*	0.217	7.514	1,96	Significant
18	*(X6) Task commitment →(Y1) Communication skill*	0.245	2.750	1,96	Significant

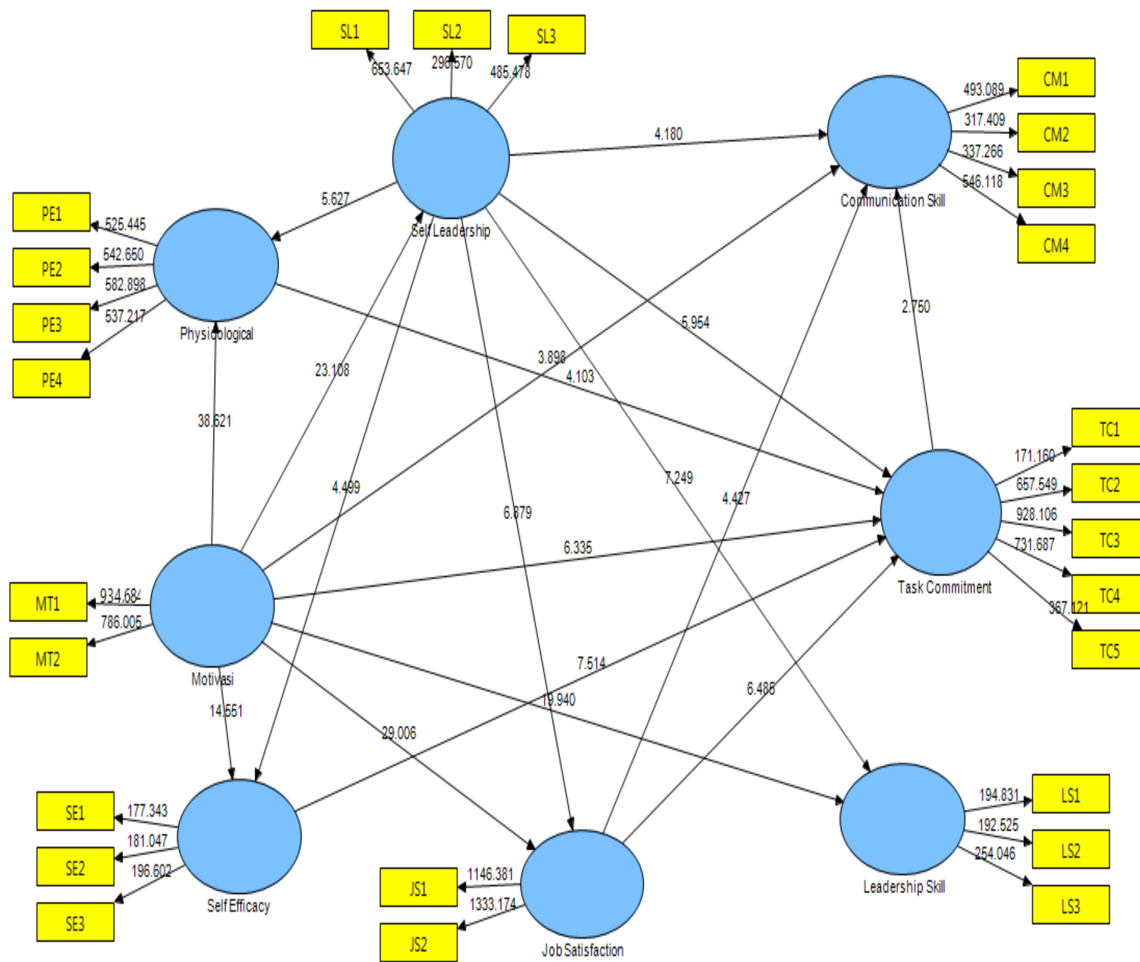

Figure 1. Finale Inner Model

Goodness of Fit Index (GoF)

The last one was to found to have the value of Goodness of Fit (GoF). In contrast to CBSEM, for GoF, the values in PLS-SEM must be searched manually. The formula is:

$$GoF = \sqrt{AVE \ x \ R^2}$$ ....Tenenhaus (2004)

The calculation of the average AVE is 0.952511, while the average R2 is 0.676291, so the value of GoF is 0.802605

According to Tenenhaus (2004), GoF small value = 0.1, GoF medium = 0.25 and large GoF = 0.38. Since the GoF value in this study was 0.802605, the GoF value was large.

The Second Stage Statistical Analysis Result

In the second stage, the data were analysed using the Wilcoxon Statistics Test, and the results obtained are shown in Table 3. From these results, it indicates that the training given to the students about the development of self-leadership capabilities based on student motivation can improve the various positive aspects that can support the implementation of the learning process, especially the clinical practice of physiological midwifery care.

DISCUSSION

The development of self-leadership skills and the student skill model explains that motivation can improve the students' self-leadership strategies in the clinical practice of physiological midwifery care. This is in accordance with (McCanse, 1991) in Wirawan (2013) which stated that motivation is an important element in leadership. Wirawan (2013) explained that motivation plays an important role in leadership, which will encourage individual motives to act. Without motivation, people will not act, move and work well for themselves or for the organisation. High and low individual motivation determines high level of effort and a variety of individual behaviours. Motivation can improve the students' job satisfaction in

Table 3. Results of the Pre- and Post-Data Analysis Training of Self Leadership Capability Development In Students of Midwifery in Sutomo Surabaya

No	Variable	Pre				Post				p	Inf
		Min	Max	Mean	+SD	Min	Max	Mean	+SD		
1	Motivation	1.10	2.30	1.39	.37	2.80	3.70	3.07	.19	0,00	sign
2.	Self leadership	1.06	2.25	1.33	.39	1.95	3.63	2.88	.34	0,00	sign
3.	Job satisfaaction	2.00	3.18	2.26	.39	2.18	3.53	2.73	.35	0,00	sign
4.	Psychological empowerment	1.08	2.42	1.43	.42	2.42	3.58	2.89	.29	0,00	sign
5.	Self efficacy	1280	1350	1301.8	19.29	1070	1640	1397.9	133.4	0,01	sign
6.	Task commitment	2.14	2.52	2.24	.116	2.79	3.83	3.14	.25	0,00	sign
7.	Leadership skill	2.00	3.11	2.29	.330	2.11	3.11	2.51	.29	0,008	sign
8.	Comunication skill	2.00	2.40	2.11	.122	2.44	3.81	2.89	.280	0,00	sign

the midwifery practice. This is consistent with the statement by Wirawan (2013) which describes that motivation will increase the stability of work. This is where individuals who have a high work motivation will have high job satisfaction. According to David McClelland in Wirawan (1991), it was stated that motivation is a need for achievement as a state of the individual’s internal drive to how much success reflects an important and valuable focus for a person. These factors can lead to job satisfaction and a willingness to work harder. If these factors exist, they will encourage more effort, but if they do not exist, then it will result in job dissatisfaction.

There is the motivation to improve the student’s psychological empowerment in midwifery practice. According to Spreitzer (1995) in Utami & Hargono (2016), psychological empowerment refers to the experience of the individual’s intrinsic motivation based on the individual's orientation to their job role. Psychological empowerment is not a fixed personality attribute. It consists of the cognition formed by the work environment. Various thoughts about psychological empowerment have evolved, including in the work of Conger and Kanungo (1988), Thomas and Velthouse (1990) in Spreitzer (1995) in Utami & Hargono (2016). Motivations can improve the student’s self-efficacy in midwifery practice. This is in accordance with the statement of Victor Vroom (1964) in Wirawan (2013), which states that work motivation relates to a person's faith or beliefs about effort, so the effort involved will produce the expected output. The theory of motivation according to Vroom is famous for the Expectancy Theory or the theory that states that the individual's perception of the possibility that an effort will lead to the achievement of a predetermined level of performance. If the expectation equals 0 (zero), then it is not possible to reach the level of performance that has been set. Expectation equals one if the person is 100 percent sure that they can achieve the specified performance. A person with self-efficacy is the belief of someone who is able to do or complete a task.

Motivation improves a student's task-commitment in the midwifery practice. This is consistent with the motivational theory of McClellan in Wirawan (2013), which stated that motivation is the need for achievement, where the need for achievement is a need to achieve something difficult. This is often to master, manipulate, or organise physical objects, human beings, or ideas. This also involves doing so as quickly and independently as possible, to solve obstacles and to obtain a high standard, to excel yourself. It also means to increase self-esteem by implementing talents successfully. According to McClelland, someone who has a high level of achievement has three characteristics, namely: he or she have a strong desire to take personal responsibility, tend to set a medium goal when faced with difficult situations and they have a great desire to get a better level of performance.

There is the motivation to improve the student’s skill in leadership in the midwifery practice. This is in accordance with McCanse 1991 in Wanarto, Guntur Budi (2014), which states that motivation is an important element

in leadership. Wirawan (2013) explains that motivation plays an important role in leadership, which will encourage the individual motivation to act. Without motivation, people will not act, move and work well for themselves or for the organisation. Katz & Kahn (1978) argue that leadership is an increase of the gradual influence on and above the mechanical adherence to routine organisational briefings. Leadership is the process of influencing the activities of a group that is organised towards the achievement of goals (Rauch, 1984). Many studies focused on leadership skills are discussed from various perspectives that have been conducted by the researchers. Leadership is a behaviour with a specific purpose to influence the activities of group members to achieve common goals designed to provide individual and organisational benefits (Cheok San Lam, 2012).

Communication skills are one of the parameters of soft interpersonal skills, which are a skill that is used for oneself and relates to others, cooperating with other groups, and so on. To be able to connect with other people requires a good communication process. For communication to run well by the set purpose, a person must have the ability or communication skills to do so. Based on the results of the National Association of Colleges and Employers NACE, 2002 in (Wanarto, Guntur Budi., 2014), the survey cited by Wanarto (2014) explained that there are 19 capabilities needed in the job market, which is where communication skills occupy the first necessary urgency. According to Hasibuan (2005), their study states that motivation is important because motivation is the cause, channel and support of human behaviour, so they must be willing to work hard and be enthusiastic to achieve the optimal results. Midwifery students are midwives who have the role of giving midwifery care to the client, hence needing the communication skill.

The self-leadership strategy can improve the student's sense of job satisfaction in physiological obstetric care practice. Students who have good self-leadership abilities will feel satisfied with the task of implementing the practice of physiological midwifery care. This is in line with the results of Sri Utami’s (2016) study that found that self-leadership strategies can improve the midwife's job satisfaction in implementing the early detection of the growth drift of toddlers. The results of this study also support the results of Politis’s research (2006) which found a direct relationship between the dimensions of the strategy focused on self-leadership behaviour with positive and statistically significant work satisfaction. The results of Yutthana's research (2010) explains that self-leadership has a direct effect on job satisfaction. This is consistent with US research studies that have found a correlation between self-leadership training and its positive impact on employee job satisfaction Neck & Manz, 1996 (in Yutthana, 2010).

Self-leadership can improve the students' psychological empowerment in the practice of physiological obstetric care. Students with a good self-leadership strategy also have high psychological empowerment. It can be explained that each self-leadership strategy has its own role. The constructive thought patterns strategies which are associated with psychological empowerment are designed to facilitate the formation of constructive thinking and thinking in a positive way (Neck & Manz, 2010). This is in line with the results of Sri Utami’s (2016) study which explains that self-leadership strategies can improve the psychological empowerment of midwives in implementing the early detection of deviations in child growth and development. Psychological empowerment is a predictable outcome of self-leadership. Self-leadership has been established as the main mechanism to facilitate empowerment by creating perceptions of meaning, purpose, self-direction/self-determination, and competence. Natural rewards from oneself can encourage feelings of self-direction, competence, and setting their own goals (Wirawan, 2013).

Self-leadership improves the students' self-efficacy in the practice of physiological obstetric care. Students with good self-leadership strategies have high self-efficacy. The results of this study support the results of (Utami & Hargono, 2016), whose research states that self-leadership strategies can improve the self-efficacy of midwives in implementing the early detection of child growth drift. The results of this study also support the research conducted by Prussia et al., (1998) in (Yutthana C, 2010) in his study of 151 employees; the results obtained showed that self-leadership has a positive effect on self-efficacy. Yutthana (2010) explained that

self-leadership has a direct effect on self-efficacy. The use of some strategic self-leadership will affect the perception of self-efficacy in a particular task.

Self-leadership can increase the task commitment of students in the midwifery care practice. Students with good self-leadership skills are committed to their high tasks as well. Commitment is the outcome of self-leadership; individuals who have strategies in self-leadership often develop a sense of belonging to their tasks and work processes. The result state that individuals can lead themselves, and that they are highly committed to their tasks and goals, both at the individual, team and organisational level, compared to individuals who cannot apply self-leadership (Wirawan, 2013).

Self-leadership increases leadership skills according to Blanchard K., Susan F, Laurie H (2006). The study explained that the earliest level of leadership is self-leadership followed by group/team leadership, organisation leadership, and the last is community/society leadership. This stage will be passed through by everyone, only the speed of each person through these stages varies. This is why there are people who, at a young age, have been able to reach a high level of leadership, but on the other hand, there is still slow development involved. Self-control is to conquer and control yourself. Those who understand others are wise; he who knows himself is intelligent. He who overpowers others is strong; he who beats himself nobly (Kaswan, 2013).

Self-leadership increases communication skills in the midwifery practice. According to Kaswan (2013), communication skills are needed in every individual, especially for those who work in an organisation or company. A person's communication skills can make it easier for individuals to convey their bright ideas to their superiors, co-workers and subordinates. Many people can explore ideas in their thoughts or imagination, but few people can effectively communicate their thoughts and imaginations to their superiors, co-workers and subordinates. Communication skills require the ability to be able to know other people, but the most important requires the ability to know oneself. A person will be able to recognise and control themselves if the individual has good self-leadership skills.

Job satisfaction can improve task commitment; this is in line with the results of Sri Utami's (2016) study which explains that job satisfaction can improve the task of a midwife in implementing the early detection of deviations in child growth and development. (Wibowo, 2013) explained that there is a significant relationship between job satisfaction with commitment. Managers are advised to increase job satisfaction to generate higher commitment. Furthermore, higher commitment can facilitate higher productivity. The level of employee satisfaction can lead to greater commitment. Otherwise, when employees feel dissatisfied, it leads to smaller commitment, which can then affect the efforts of the employees (Lijan, 2016).

Psychological empowerment can increase the task commitment in the practice of physiological midwifery care, where students who have high psychological empowerment will have a high level of task commitment as well. Scott et al., (2011) found a strong relationship between intrinsic motivation and affective commitment, meaning that the psychological dimension of empowerment has a role in increasing affective commitment. Also, meaningful feelings, competencies and impacts tend to increase individual commitment to the organisation, as they will further enhance the ability of the individuals to express their values and interests through their work. Psychological empowerment is an intensive form of work regardless of the addition of rewards or salaries.

Psychological empowerment does not improve the students' communication skills in the midwifery practice. This is not in accordance with Rober Moss Kanter (1977) directed by Wirawan (2013), which states that empowerment empowers people to operate in unfavourable situations in an organisation. The psychological empowerment of the individual will produce positive things, namely improving the work, work processes, sharing knowledge and skills and experience.

Psychological empowerment can improve the work process. Someone in work or doing a set job process will need to interact with others. For communication to work effectively, one must have good communication skills. Mardatillah (2016) explained that communication skills are required by every individual, especially for

those who work in an organisation or company. A person's communication skills can make it easier for individuals to convey their brilliant ideas to their boss or colleagues. With good communication skills, it will be easy to tell the ideas better so then it can be accepted. Although in this study, psychological empowerment cannot improve student skill communication, but psychological empowerment improvement is still very necessary because psychology can have a positive impact towards increasing of the other variables that can improve performance.

Psychological empowerment does not improve student skill leadership in the midwifery practice. This result is not in line with Wirawan (2013), who states that empowerment is one aspect of organisational development concerning human resource development. Empowerment means making allowing or permitting either one's own initiative or that of others. Empowerment is an interactive process based on synergism, not from zero assumptions about power. The empowerment process enlarges power in the opposite situation by merely redistributing power.

Individuals who have their own perception are highly empowered as they have a broad view of the future. Wirawan (2013) declared that empowerment aims to describe humans which have the characteristics of having views about the world and their self-concept accurately, seeing themselves as having a benefit/use, having the ability to do something, knowing the meaning of someone sought, and progressing in life, being able to see the reason for the output and to evaluate in a compelling way. Finally, empowerment can envision the success that is capable of carrying out meaningful activities, concentrating efforts, initiating actions and flexible interactions.

Although the results of this study indicated that psychological empowerment could not improve leadership skills, for educational institutions or other organisations, it is very important to keep improving the psychology of the students or employees in the organisation. This is because many positive outcomes can be generated from good or high psychological empowerment. According to Sri Utami's (2016) research, psychological empowerment affects increasing task commitment and performance either directly or when mediated by the task commitment variable.

Self-efficacy can increase the student's commitment task in the midwifery practice. Students with high self-efficacy have high task commitment. A person with high self-efficacy will try to accomplish their tasks with various amounts of efforts; they will face obstacles that they will encounter that will not make them give up. A person with high self-efficacy will tend to set themselves goals that are more challenging, and they will be more committed to the goals of the task performed. Conversely, someone with low self-efficacy will easily give up when faced with challenges or difficulties (Bandura, 1986).

Self-efficacy does not improve the students' communication skills in the midwifery practice. Lack of access to media, unavailability to use the media, the individual's educational level, and the language used in dissemination were some of the major factors hindering effective communication to the youths (Judy, Box, & Box, 2015). In persuasive communication, the role of the communicator is very important and influential. Thus, it must have a high-performance value. A communicator who has a high-performance value can be characterised by readiness, sincerity, trust, tranquillity, friendliness and simplicity in conveying the message. With a high self-efficacy, one will be sure to achieve the communication objectives that he has set. In this study, however, most of the students' communication skills in the practice of physiological obstetric care are mostly in the insufficient category, as well as self-efficacy also being in the insufficient category. There is an effort to improve both of these factors so that students have high-quality soft skills too because communication is one of the soft skills (Hassan et al., 2013).

Self-efficacy can not improve student skill leadership in the midwifery practice (Study et al., 2017). This is not in accordance with Agus Mulyanto (2011), who in their study stated the factors that influence teacher leadership in key learning, and that leadership qualities are superior if they have at least 8 to 9 of the best leadership qualities. One of these is always positive thinking. According to Bandura, self-efficacy is the self-perception of how well the self can function in certain situations. Bandura 1991 in (Utami, Hargono, & Susilaningrum, 2016) stated that

individuals who have high self-efficacy would achieve better performance because these individuals have strong motivation, clear goals, stable emotions and the ability to deliver performance in relation to a successful activity or behaviour. Individuals with high self-efficacy have the following characteristics: able to handle problems they face effectively, confident of success in dealing with problems or obstacles, problems are seen as a challenge that must be faced and not avoided, believe in the abilities they have, quickly rise from the failure they face and like to seek new situations.

In this study, it obtained results that stated that most of the respondents have moderate self-efficacy up to high, but when viewed in relation to leadership skill, most are in the less and moderate category. This shows that high self-efficacy must be accompanied by other variables to equal good leadership skills. Self-efficacy or beliefs about self-esteem can lead to overconfident attitudes. Sri Utami’s (2016) attitude about overconfident is that someone’s self-esteem can cause the person to become negligent to their duties and responsibilities; this causes a person's performance to no longer be maximised.

Job satisfaction improves the student’s skills in communication in midwifery practice. In accordance with Frederick Herzeberg (1959) cited by Wirawan (2013), it states that the factors of job satisfaction are a good initial input to develop a model of job satisfaction. Job satisfaction and job dissatisfaction are caused by several factors or dimensions that cause satisfaction or dissatisfaction in relation to work. If the perception of the employees or individuals towards the dimensions of the cause of job satisfaction is positive, then the individual will feel satisfied, and vice versa.

Job satisfaction does not improve the students' leadership skills in the midwifery practice. The results of this study are in accordance with the results of the meta-analysis by Organ and Ryan (1985) in Wirawan (2013), who found no relationship between job satisfaction and leadership effectiveness. This is not in accordance with the opinion of Lijan P.S. (2016), who stated that job satisfaction would lead to employee commitment. One of the characteristics of effective leadership is that a leader has a high commitment both to the task and to the organisation. According to Benard M. Bass (1990) cited by Wirawan (2013), their study suggests a list of attributes that leaders possess as a result of the research conducted between 1948 and 1970 to do with high task motivation. Someone with high job satisfaction will have a high commitment to work, innovate and be creative. These are all characteristics of an effective leader. Although in the research study, job satisfaction cannot improve leadership skills, but the two variables should still be improved in the midwifery students. Job satisfaction owned by the students must be accompanied by the commitment and high responsibility because high job satisfaction and is an important attitude in relation to leadership skills.

Task commitment improves the students skills in midwifery care. Communication skills are important in building a successful relationship within both personal and professional relationships. With good communication skills, it will produce an effective communication process. Relationships work well if built from a strong commitment to carry out promises, and how to respond to challenges. Mardatillah (2016) explained that commitment always reflects a strong sense of belief, sincerity and desire always to be willing to sincerely develop, maintain and work for the benefit of the organisation without wishing to not belong to the organisation.

Task commitment alone cannot improve the students' leadership skills in the midwifery practice. This is not in accordance with Benard M. Bass (1990) cited by Wirawan (2013), who suggests a list of attributes that leaders possess as a result of the research between 1948 and 1970 which has a firm stand against obstacles, responsibility for achieving results, and is task-oriented. These traits are characteristic of a person who commits to tasks.

CONCLUSIONS

Self-leadership supported by motivation is an important first step in shaping leadership and communication skills. Self-leadership students will be able to improve their psychological empowerment, self-efficacy, job satisfaction, task commitment, communication skills and leadership skills. Job satisfaction and high self-efficacy from the students must be followed by high task

commitment as well. Without task commitment, self-efficacy and the job satisfaction of the students cannot improve their communication skills. Motivation strategy, self-leadership and task commitment are three important factors in improving the student's skills in communication in the midwifery care practice. The development model of self-leadership and communication skills has been built based on motivation, self-leadership and task commitment through various channels. Training using the self-leadership module can improve the ability of motivation, self-leadership strategies, job satisfaction, self-efficacy, psychological empowerment, task commitment, communication and student leadership skills.

There needs to be an important effort to improve the student's learning motivation, giving opportunities to the student to develop their ability in developing a self-leadership strategy by giving them limited autonomy according to the tasks and responsibilities of the student, giving them responsibility in every activity to finish the tasks that are targeted and in the goals of the educational institution. The next researcher is expected to research about the other variables that influence self-leadership, leadership and communication skills. The model in this study can be used as an inspiration to develop the other variables to improve the communication and leadership skills. There needs to be further research done on the parameters and other indicators of the soft skills, such as relationship skills, presentation skills, public speaking skills and stress management.

REFERENCES

Blanchard K., Susan F, Laurie H, (2006) *Self-leadership and the one Minute Manager*. Harper Collins: New York

Cheok San Lam, E. R. E. O. (2012). Enhancing employee outcomes: The interrelated influences of managers' emotional intelligence and leadership style. *Leadership & Organization Development Journal*, *Vol. 33 is*, 149–174.

Hassan, A., Maharoff, M., Zainal Abiddin, N., SUPER, To, S., Progress, A. R., … Yadav, A. (2013). Soft Skills Competency Tool for Secondary Teachers in Strengthening Effective. *University of Portland, USA*, *2*(March), 146–155. https://doi.org/10.9790/7388-0251929

Judy, C. B., Box, P. O., & Box, P. O. (2015). Factors that Influence Effective Communication of the Youth Enterprise Development Fund to the Youth in Kabianga Division , Kericho County , Kenya, *5*(4), 172–178.

Kuswara, H., Apapun Mata Kuliah Yang diasuh Berikan Muatan soft skills Didalamnya. *Availabel at: www.frieyadie.com.htm. Diakses tanggal 3 Maret 2017*.

Mardatillah, A. (2016) *Think and Grow Success by Soft Skill*, Solo: Ary Haeko Sinergi Persada (ASP).

Puliam, M.G. (2008). Skill Employer Seek. Career Corner, Excelsior College. https://www.excelsior.edu/Excelsior_ College/ Publications/Skills_ Employers_ Seek_16 pdf , Diakses tanggal 10 April 2015

Suryani, E.S. (2015) Peningkatan Kemampuan Soft Skills Kepemimpinan dan Komunikasi Mahasiswa Kebidanan Melalui Community Based Medical Education (CBME). *Jurnal Ilmiah Kebidanan*, Vol. 6 No.1, pp.23–33.

Utami, S., & Hargono, R. (2016). Task commitment of midwife as an effort to enhance performance in early deviations detection on children growth and development based on self-leadership at working area of health agency Surabaya Indonesia, *4*(4), 8–15.

Utami, S., Hargono, R., & Susilaningrum, R. (2016). Midwives Performance in Early Detection of Growth and Development Irregularities of Children Based on Task Commitment, *5*(4), 300–305.

Wanarto, Guntur Budi., S. (2014). *Soft Skill dan Perilaku Kesehatan*. Surabaya: Forikes.

Wirawan. (2013). *Kepemimpinan Teori, Psikologi, Perilaku Organisasi, Aplikasi dan Penelitian,*. Jakarta: PT Raja Grafindo Persada.

Yutthana C. (2010). an Examination of Self-leadership Performance Mechanism model In Thai Private Organization,. *The Journal of Behavioral Science*, *5(1)*, 15–32.

EFFECTIVENESS OF HEALTH EDUCATION FAMILY PLANNING GUIDELINES ON HEALTH BELIEFS AND BEHAVIOURS REGARDING FAMILY PLANNING METHODS AMONG MARRIED MEN IN MYANMAR

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ABSTRACT

Introduction: Males are the most important members and care-takers of the family, but they are considered to be uncooperative when it comes to the usage of family planning methods. Traditionally, family planning programs have focused primarily on women, and most of the methods are designed for women considering that it is the women who become pregnant and it is easy to deliver reproductive health services as part of maternal and child health programs. The main objective of this study was to study the effectiveness of Health Education (HE) Family Planning Guidelines on Health Belief and Behaviours regarding family planning methods among married men **Methods:** A quasi-experimental study design was used to compare the results of the effectiveness of health education on the health beliefs and behaviours regarding family planning methods among married men. Mann-Whitney test and Manova test were used to analyse the data. **Results:** It was found that there was a difference of health belief with p= 0.038, knowledge with p= 0.000 and attitude with p= 0.000 between the treatment and control group. **Conclusions:** There was an impact on the improvement of health belief and behaviours regarding family planning methods in the study group which was significantly improved after intervention. As the predetermined hypothesis, a difference was found between the knowledge, attitude and health beliefs of the married men who received health education and those who did not receive health education.

Keywords: behaviours, family planning, health belief, married men

INTRODUCTION

Family planning is a way of thinking and living that is adopted voluntarily on the basis of knowledge, attitude and responsible decisions by individuals and couples in order to promote health and welfare of the family, groups and thus to contribute effectively to the social development of the country (WHO, 2011). Males are the most important members and caretakers of the family, but they are considered to be uncooperative when it comes to the usage of family planning methods. Traditionally, family planning programs have focused primarily on women, and most of the methods are designed for women considering that it is the women who become pregnant and it is easy to deliver reproductive health services as part of maternal and child health programs (Adelekan et al., 2014). Despite global recognition of the importance of male involvement in family planning, Myanmar has not developed a program in family planning that fully involves men. Most family planning programs in our environment seem to focus on women only. The non-inclusion of men in various family planning programs by the program planners has made men not know much about family planning and the benefits to their spouses and family, especially in rural communities. Yet men can participate in family planning either as the users of male methods or as supportive partners of users (Fumilayo and Kolawole, 2000, Chinma, 2014). Men have rarely been involved in either receiving or providing information on sexuality, reproductive health, or birth spacing. They have also been ignored or excluded in one way or another from participating in many FP programs as FP is viewed as a woman's affair (Walle et al., 2014).

In the global society, 1,600 women and more than 10,000 newborns die from preventable complications during pregnancy and childbirth every day. Almost 99% of the maternal and 90% of the neonatal deaths occur in developing countries. As the first pillar of safe motherhood and as an essential component of primary health care, family planning plays a major role in reducing maternal and newborn morbidity and mortality (WHO, 2012). The maternal mortality ratio in developing countries in 2015 was 239 per 100 000 live births versus 12 per 100 000 live births in developed countries. There are large disparities between countries, but also within countries, between women with high and low income, and women living in rural versus urban areas (WHO, 2015). Rapid population growth represents one of the major population concerns in Myanmar where the population

growth rate is 1.0%, and this is estimated to exceed 58.6 million in 2050. In 2014, the population of Myanmar was about 51 million people. The sex ratio of the total population is 0.93 comprising of 93 males per 100 females (MOH, 2014). Family planning plays one of the more important roles in controlling the population growth rate of the country. In general, the consequences of a lack of access to FP are not only a high number of undesired pregnancies but also the increased risk of sexually transmitted diseases and a high number of abortions (WHO, 2014). The unmet needs for FP in Myanmar stand at 19%, compared with only 3% in neighbouring Thailand (MIO, 2014). A total of 70% of the population live in rural areas with little or no access to FP and maternal health services (MIO, 2014). Maternal mortality in Myanmar is 200 per 100,000 live births (DOP, 2014).

The United Nations Population Fund reports that 87% of maternal deaths occur in rural areas, largely due to poor infrastructure and a lack of reproductive health access and awareness (World Bank, 2013). The reduction of unintended pregnancies can also result in fewer abortions, which can carry a high mortality risk when there are complications (Siri & Munsawaengsub, 2016). It is now increasingly recognised that the actions required to achieve improvements in family planning should also encourage the active participation of men (Rekha et al., 2015). The Myanmar Ministry of Health reports the contraceptive use of the whole country at 46% and hopes to increase this to 50% (MOH, 2012). In Wundwin Township, the total population is 235000. Among them, the total birth population is 3500, stillbirths are 50, abortions are 80, and maternal deaths were 5 in 2015. According to the 2015 report of Lay Myat Nar and Pin Ta Lae rural health centres (RHC), the total live-births is 100 per 5158 population. Among them, there were included 4 still-births, 15 abortion cases and 2 maternal deaths.

Based on the description in the background of the formulation of the problem, the researcher will determine the knowledge and attitude regarding family planning methods among married men who live in Lay Myat Nar village, Pin Ta Lae village in the Mandalay Region in Myanmar based on the health belief model.

MATERIALS AND METHODS

The study design was a forum to answer the research questions or to test the hypothesis expertise (Nursalam, 2008). In this study, a quasi-experimental study design was used to compare the results of the effectiveness of health education on health belief and behaviours regarding family planning methods among married men. Each group had 45 married men in whose wives were still of female reproductive age. This study was conducted at Pin Ta Lae and Lay Myat Nar villages, in the Wundwin Township of the Mandalay Region in Myanmar. The data was collected from the sample population by conducting face to face interviews using a structured interview questionnaire. A Mann-Whitney test and an ANOVA test was used to analyse the data. Approval and permission to conduct the study were given by the Research Ethics Committee of the Military Institute of Nursing and Paramedical Sciences, Myanmar, and a recommendation for the protection of human rights and welfare in medical research came from the ethical committee of the Faculty of Nursing, of the Universitas Airlangga in Surabaya, Indonesia. The approval and permission to conduct this study were obtained from the Department of Medical Science, in the Department of Health, of the Ministry of Health of Nay Pyi Taw, Myanmar.

RESULTS

Table 1 shows that the characteristics of the respondents in the intervention group based the respondent's age which was between 36-45 years for as many as 20 respondents (44.4%). Characteristics of all of the respondents of the Buddhist religion were as many as 45 respondents (100%). The most popular education level of the respondents was primary school level that was 16 respondents (35.6%). Characteristics based on the occupation of the respondents was that of a farmer, which was 31 respondents (68.9%). The characteristics of the respondents based on the total family income were 1 lakh and under for as many as 27 of the respondents (60.0%). Most of the respondents had children; 37 respondents (82.2%).In the control group, it showed that the characteristics of the respondents in the control group based on the respondent's age

Table 1 Distribution of respondents based on the characteristics of respondents in the treatment group and control group

Characteristics	Intervention Group		Control Group	
	f	%	f	%
Age				
< 25 years	4	8.9	4	8.9
26 – 35 years	9	20.0	17	37.8
36 – 45 years	20	44.4	18	40.0
46 – 55 years	12	26.7	4	8.9
56 or older			2	4.4
Religion				
Buddish	45	100	45	100
Education				
Illiterate			2	4.4
Can read & write	2	4.4	4	8.9
Primary school level	16	35.6	8	17.8
Middle school level	15	33.3	13	28.9
High school level	12	26.7	18	40.0
Occupation				
Farmer	31	68.9	20	44.4
Government employee	1	2.2	5	11.1
Merchant	3	6.7	5	11.1
Private employee	2	4.4	2	4.4
Daily labourer	8	17.8	13	28.9
Total Family income				
1 lakh and under	27	60.0	27	60.0
100001 to 200000	13	28.9	15	33.3
200001 to 300000	5	11.1	2	4.4
More than 300000			1	2.2
Having Child				
No	8	17.8	12	26.7
Yes	37	82.2	33	73.3
Child Number				
0	8	17.8	12	26.7
1	9	20	10	22.2
2	13	28.4	11	24.4
3	11	24.4	7	5.6
4	3	6.7	2	4.4
5	1	2.2	2	4.4
6			1	2.2
Age				
1	10	22.2	21	46.7
2	15	33.3	19	42.2
3	20	44.4	5	11.1

was that those aged between 36-45 years was 18 of the respondents (40%). The characteristics of all of the respondents were of the Buddhist religion; 45 respondents (100%). The education level of the respondents who went to high school was 18 respondents (40%). The characteristic based on the occupation of the respondent was that of a farmer; 20 respondents (44.4%). The characteristic of the respondents based on the total family income was 1 lakh and under as the most frequent; 27 respondents (60.0%). Most of the respondents have children; 33 respondents (73.3%).

Table 2 shows that the knowledge of the respondents in the intervention group in the pre-test was that 18 respondents (40%) were in the poor category, 26 respondents (57.78%) were in enough category and 1 respondent (2.22%) was in a good category. In the post-test, there were 24 respondents (53.33%) in enough category and 21 respondents (46.67%) in the good category. In the control group, there were 21 respondents (46.67%) in the poor category, 20 respondents (44.44%) in enough category and 4 respondents (8.89%) in the good category. There were 31 respondents (68.89%) in the poor category, 12 respondents (26.67%) in enough category and 2 respondents (4.44%) in the good category in the post-test.

Table 3 shows that the attitude of the respondents in the intervention group in the pre-test was 40 respondents (88.89%) had a positive attitude and 5 respondents (11.11%) had a negative attitude. In the post-test, all of the respondents (100%) had a positive attitude. In the pre-test of the control group, there were 39 respondents (86.67%) that had a positive attitude and 6 respondents (13.33%) that had a negative attitude. In the post-test, there were 38 respondents (84.44%) that had a positive

Table 2. Distribution of Knowledge (pre and post-test)

Knowledge		Group			
		Intervention		Control	
		f	%	f	%
Pre test	Poor	18	40	21	46.67
	Enough	26	57.78	20	44.44
	Good	1	2.22	4	8.89
	Total	45	100	45	100
Post test	Poor	-		31	68.89
	Enough	24	53.33	12	26.67
	Good	21	46.67	2	4.44
	Total	45	100	45	100

Table 3. Distribution of Attitude (pre and post-test)

Attitude		Group			
		Intervention		Control	
		f	%	f	%
Pre test	Positive	40	88.89	39	86.67
	Negative	5	11.11	6	13.33
Post test	Positive	45	100	38	84.44
	Negative	-	-	7	15.56

Table 4. Distribution of Health Belief Scores (pre and post-test)

Variable		Category	Group			
			Intervention		Control	
			Amount	%	Amount	%
Perceived susceptibility	Pre test	Poor	-		-	
		Enough	3	6.67 %	8	17.78%
		Good	37	82.82 %	28	62.22%
		Very good	5	11.11%	9	20%
	Post test	Poor	-	-	-	-
		Enough	-	-	8	17.78%
		Good	36	80%	31	68.89%
		Very good	9	20%	6	13.33%
Perceived Severity	Pre test	Poor	-	-	-	-
		Enough	4	8.89%	2	4.44%
		Good	27	60%	28	62.22%
		Very good	14	31.11%	15	33.33%
	Post test	Poor	-	-	-	-
		Enough	-	-	1	2.22%
		Good	14	31.11%	18	40%
		Very good	31	68.89%	26	57.78%
Perceived benefit	Pre test	Poor	-	-	-	-
		Enough	2	4.44%	-	-
		Good	20	44.44%	31	68.89%
		Very good	23	51.11%	14	31.11%
	Post test	Poor	-	-	-	-
		Enough	-	-	7	15.56%
		Good	14	31.11%	33	73.33%
		Very good	31	68.89%	5	11.11%
Perceived barrier	Pre test	Poor	-	-	-	-
		Enough	1	2.22%	3	6.67%
		Good	38	84.44%	36	80%
		Very good	6	13.33%	6	13.33%
	Post test	Poor	-	-	-	-
		Enough	1	2.22%	3	6.67%
		Good	18	40%	39	86.67%
		Very good	26	57.78%	3	6.67%
Self-efficacy	Pre test	Poor	-	-	-	-
		Enough	2	4.44%	5	11.11%
		Good	29	64.44%	28	62.22%
		Very good	14	31.11%	12	26.67%
	Post test	Poor	-	-	-	-
		Enough	-	-	4	8.89%
		Good	17	37.78%	34	75.56%
		Very good	28	62.22%	7	15.56%

attitude and 7 respondents (15.56%) that had a negative attitude.

Table 4 shows that the majority of the respondents to do with perceived susceptibility in the intervention group in pre-test were in a good category, and only three respondents were in enough category. In the post-test, 9 respondents (20%) increased into the very good category. In the control group of the pre-test, the majority of the respondents were in a good category, and 8 respondents (20%) were in enough category. In the post-test, three respondents were decreased from the very good category into the good category. The majority of the respondents in relation to the perceived severity in the intervention group in the pre-test were in a good category, and only 4 respondents were in enough category. In the post-test, 17 respondents were increased into the very good category. In the control group of the pre-test, the majority of the respondents were in a good category, and only 2 respondents were in enough category. In the post-test, 11 respondents were increased into the very good category.

The majority of respondents in relation to the perceived benefit of the respondents in the intervention group in the pre-test were in the very good category, and only 2 respondents were in enough category. In the

Table 5 The results of Mann Whitney test

Variables		Sig.
Knowledge	Post Intervention and Post Control	.000
Attitude	Post Intervention and Post Control	.000
Perceived Susceptibility	Post Intervention and Post Control	.000
Perceived Severity	Post Intervention and Post Control	.000
Perceived Benefit	Post Intervention and Post Control	.000
Perceived Barrier	Post Intervention and Post Control	.000
Self-Efficacy	Post Intervention and Post Control	.000

Table 6 Test the difference between the treatment group and the control group by using Manova test

Effect		Value	F	Hypothesis df	Sig
HE	*Pillai's trace*	.661	55.962^b	3.000	.000
	Wilk's lambda	.339	55.962^b	3.000	.000
	Hotteling's trace	1.952	55.962^b	3.000	.000
	Roy's largest root	1.952	55.962^b	3.000	.000

Tabel 7 The results of the analysis on the intervention group and the control group by using Manova Test

Variables	df	Mean	F	P value
Knowledge	1	852.544	124.726	.000
Attitude	1	915.211	37.500	.000
Health Belief	1	3397.878	52.294	.000
Perceived Susceptibility	1	122.500	22.777	.000
Perceived Severity	1	30.044	5.961	.017
Perceived Benefit	1	380.278	51.103	.000
Perceived Barrier	1	313.600	60.402	.000
Self-Efficacy	1	74.711	15.816	.000

post-test, 8 respondents were increased into the very good category. In the control group of the pre-test, the majority of the respondents were in a good category. In the post-test, 7 respondents were decreased into enough category. The majority of the respondents in the perceived barrier of respondents in the intervention group in the pre-test were in a good category, and only one respondent was in enough category. In the post-test, 20 respondents were increased into the very good category, and one respondent was still in enough category. In the control group of the pre-test, the majority of the respondents were in a good category, and only 3 respondents were in enough category. In the post-test, 3 respondents were decreased from the very good category into the good category.

Table 5 shows that based on the Mann Whitney test, significant $p< 0.05$ for all of the variables and sub-variables. There were differences between the intervention and control group. Health education is effective on health belief.

Table 6 shows that in general, there were differences in average knowledge, attitude and health belief between the intervention and control groups. The results show that the value of Hotteling's trace was sig. 0.000 which means that is smaller than α 0.05. It is stated that there was a difference in knowledge, attitude and health belief between the intervention group and control group.

Table 7 shows that there was a difference in knowledge with $p = 0.000$ and attitude with $p = 0.000$, health belief with $p = 0.000$, perceived susceptibility with $p = 0.000$, perceived severity with $p = 0.017$, perceived benefit with $p = 0.000$, perceived barrier with $p = 0.000$ and self-efficacy with $p = 0.000$ between the intervention group and control group.

DISCUSSION

To my knowledge, this is the first study conducted in analysing the effect of health education family planning guidelines on health belief and behaviours regarding family planning methods among married men in Myanmar. In this study, the majority of the intervention group have enough knowledge about family planning methods before they had any health education. After giving health education about family planning guidelines, 21 respondents were increased into the good knowledge category. In the control group, there were 21 respondents in the poor category, 20 respondents in enough category and 4 respondents in the good category in the

pre-test and 31 respondents in the poor category, 12 respondents in enough category and 2 respondents in the good category in the post-test. In this study, most of the respondents had knowledge about contraceptive methods from their friends. Some respondents knew from their health care provider and their wives.

A similar study conducted by Chaudhary et al. (2015) showed that 19.1% of married men had good knowledge about family planning methods while the majority of men (58.4%) had average knowledge. Others (22.5%) had poor knowledge about the same. Berhane et al. (2011) revealed that most of the male respondents had information about family planning. About 36.6% of the respondents knew more than one method of family planning. Nanji et al. (2015) stated that knowledge of family planning from the urban respondents was higher than from the rural respondents. Family planning education could increase the knowledge of men about modern contraceptives, but the use of contraceptives by men may not increase which indicates that the behaviour change process may take a longer time to have an effect (Shahamfar et al., 2007). Mahamed (2012) stated that educational method is effective in increasing the knowledge and improving the attitude of family planning. The use of family planning methods depends on the person’s knowledge of the different family planning methods available and the willingness of both spouses to participate in the family planning program. In order to determine the interest of the participants in the subject of family planning, the study sought to establish the participants’ general knowledge about the various family planning methods they were familiar and regularly used (Sossou, 2008).

In this study, most of the respondents had a primary and middle-high school level of education. One-third of the respondents had poor knowledge level. The increased knowledge of the respondents in the intervention group may be influenced by factors such as educational level, age and previous information on family planning guidelines. As a result, health education was required to improve the knowledge about family planning methods among married men. Health education about family planning guidelines can also increase the score of knowledge in the treatment group. In this study, the researcher gave health education about family planning guidelines by group teaching methods by using booklets and a computer as a visual aid. The researcher assumed that the increase of the knowledge score could be caused by providing health education with group teaching methods.

The majority of the respondents of the intervention group had a positive attitude, and five respondents had a negative attitude before the intervention. After the intervention, all of the respondents increased into having a positive attitude. In the control group, the majority of the respondents had a positive attitude, and six respondents had a negative attitude. In the post-test of the control group, the majority of the respondents had a positive attitude, and seven respondents had a negative attitude.

Khamis (2007) stated that most of the husbands (89.3%) had positive attitudes towards family planning and agreed that modern methods are more effective than traditional methods. Chaudhary et al. (2015) showed that only (10%) of married men had a positive attitude towards family planning while the majority (64.4%) had an average attitude. (25.6%) men had a negative attitude towards the same. Ayub et al. (2015) revealed that most of the respondents had a positive attitude towards family planning and appreciated the effectiveness of modern methods over traditional methods. Mahamed (2012) stated that there was a significant improvement in the respondents’ attitude after undergoing the educational program in the experimental group. Bani et al. (2014) revealed that more than half of the men (52.8%) had good knowledge about the family planning program. However, most men (84.1%) had a positive attitude regarding family planning programs, and also they had (66.6%) an increased rate of participation. It will be noteworthy that attitude is a response that comes from knowledge and experience. Attitude consists of three elements; cognitive, affective and behavioural. An affective domain is related to bad or good, negative or positive, helpful or not helpful feelings in every individual. The behavioural aspect is the individual's readiness for action.

In this study, most of the respondents had a positive attitude about family planning. It may be that they have proper knowledge about family planning methods. However,

their information about family planning can still be inadequate. They do not know the different family planning methods, and how and where they are inserted. In addition, they do not know the side effects of the different family planning methods. In this study, the researcher mentioned the benefits of family planning and the advantages and side effects of the male contraceptive methods to improve the attitude level and to decrease the misconceptions about married men. Group teaching methods using booklets and a laptop was effective in improving the attitude level of married men. The men's attitude was much more important in the adaptation of family planning methods. Men should have a good attitude level about family planning.

The majority of the respondents in the intervention group in relation to perceived susceptibility had a good score before the intervention, and nine respondents were increased into the very good score after the intervention. In the control group, the majority of the respondents in perceived susceptibility had a good score both pre- and post-test. The majority of the respondents of the intervention group in perceived severity had a good score before the intervention, and 17 respondents were increased into the very good score after the intervention. In the control group, the majority of the respondents in perceived severity had a good score in both the pre- and post-test.

The majority of the respondents in the intervention group in perceived benefit had a very good score before the intervention, and eight respondents were increased into the very good score category after the intervention. In the control group, the majority of the respondents in perceived benefit had a good score both pre- and post-test. The majority of the respondents in the intervention group in perceived barrier had a good score before the intervention, and the majority of respondents had a very good score after the intervention. In the control group, the majority of the respondents in perceived barrier had a good score in both pre- and post-test. The majority of the respondents in the intervention group in self-efficacy had a good score before the intervention, and majority of the respondents were increased to a very good score after the intervention. In the control group, the majority of the respondents in self-efficacy had a good score both pre- and post-test.

Mahmoodi et al. (2011) stated that there was a significant difference between before and after education. The result of the paired T-test between the before and after scores of perceived threat, perceived benefits and perceived barriers reveals that education improves the individuals' perceptions about participation in family planning programs. In this study, married men from both groups had a good level of health belief, and the post-test score of the intervention group was increased significantly. In this study, the researcher gave a health education program by using group teaching methods among married men. When giving the health education, the intervention group was divided into three groups, and each group involved 15 respondents. The researcher used booklets and a laptop as visual aids for a more effective learning process. The researcher assumed that the increase in the health belief score could be caused by offering health education with group teaching methods.

CONCLUSION

Health education family planning guidelines significantly affect health belief and behaviours regarding family planning methods among married men in Myanmar. This study can be used as a preliminary study to identify the effectiveness of health education family planning guidelines on health belief and behaviours regarding family planning methods among married men. Men are encouraged to participate in family planning programs, and the appropriate centres and departments should promote health education family planning guidelines for men to improve their knowledge.

REFERENCES

Adelekan, A., Omoregie, P. & Edoni, E., 2014. Male Involvement in Family Planning : Challenges and Way Forward. , 2014.

Ayub, A., Kibria, Z., & Khan, F., 2015. Assessment of Knowledge, Attitude and Contraceptive use in Married Women of Peshawar, Vol. 9 (1):1-2

Bani, S. Et Al. (2014) 'International Journal of Awareness, Attitude And Participation Rate Of Men In Family Planning Programs In Iran', 2(1).

Berhane, A., Biadgilign, S., Amberbir, A., Morankar, S., Berhane, A., & Deribe,

K. (2011). Men ' s Knowledge and Spousal Communication about Modern Family Planning Methods in Ethiopia, 15(December), 24–32.

Chaudhary, B. K., Wantamutte, A. S., & Sah, J. K. (2015). Knowledge , attitude and practices regarding family planning methods among married men in urban field practice area of Ramnagar urban health center , Belagavi- A cross-sectional study, 8, 212–219.

Department of Population, Ministry of Immigration and Population. The population and housing census of Myanmar 2014 summary of the provision results. http://country office.unfpa.org/myanmar/drive/Sum mmary of the Provisional Results.pdf. Accessed January 2015.

Fumilayo, O. and Kolawole, K. O. (2000) Training Hand book for family planning clinics, services providers, fertility Research unit, college of medicine University of Ibadan.

Khamis, Y., & Almualm, A. (2007). Knowledge, attitude and practice of husbands towards modern family planning in Mukalla, Yemin.

Mahamed, F. (2012) 'Impact of Family Planning Health Education on the Knowledge and Attitude among Yasoujian Women', 4(2), pp. 110–118. doi: 10.5539/gjhs.v4n2p110.

Mahmoodi, A. et al. (2011) ' The Impact of Education using Health Belief Model on awareness and attitude of male Teachers Regarding Their Participation in Family Planning', (1), pp. 45–49.

Ministry of Immigration and Population. Summary of the provisional result 2014. http://unstats.un.org/unsd/demographic/sources/census/2010_PHC/Myanmar/MMR-2015-05.pdf. Accessed July 2014.

Ministry of Health. Health in Myanmar, 2013. Naypyidaw, Myanmar: Ministry of Health; 2014.

Ministry of Health. Township health report. Naypyidaw, Myanmar: Township Health Department, Aung Lan Township; 2012.

Nnaji, G. A., Eze, P. N., Ugwoke, U. M., & Ifeadike, C. O. (2015). Comparative assessment of family planning knowledge and attitude of men in urban and rural areas of Anambra state , South-East of Nigeria, 2. http://doi.org/10.7243/2054-9865-2-3

Nursalam 2008, Concept and Application of Research Methodology of Nursing Science. Thesis and nursing research instrument. Jakarta: Salemba Medika

Rekha, T., Unnikrishnan, B., Mithra, P. P., & Kumar, N. (2015). Married Men ' s Involvement in Family Planning – A Study from Coastal, 9(4), 7–10.

Shahamfar, J., Kishore, J., & Shokhvash, B. (2007). Effect of educational intervention on male participation in family planning in Iran, alketa(4), 292–299.

Siri, S. & Munsawaengsub, C., 2016. Family Planning Practice Among Rural Reproductive-Age Married Women in Myanmar. , alketa.

Sossou, M. A. N. S. (2008) 'Attitudes toward and Use of Knowledge about family Planning among Ghanaian Men', 7(2), pp. 109–120. doi: 10.3149/jmh 0702.109.

The World Bank. Working for a world free of poverty, unmet need for contraception (% of married women ages 15-49) facts sheet. http://data.worldbank.org/indicator/SP.UWT.TFRT.Accessed July 2013.

Walle, Y., & Alamrew, Z. (2014). The Current States of Male Involvement on Family Planning and Factors Correlated with among Male Factory Workers in Bahir Dar City, 2(5), 188–197. http://doi.org/10.12691/ajphr-2-5-2

WHO, (2011). World Health Organization (2011) Family Planning a Global handbook for Providers. WHO Geneva.

WHO. Addressing the challenges of women's health in Africa. The commission on women's health in Africa report. WHO Africa Office.2012.

WHO (2015). Family Planning. Available at: http://www.who.int/mediacentre/factsheets/ fs351/en/ [Accessed 9 April 2015].

World Health Organization. Family planning.http://www.who.int/topics/family_planning/en/. Accessed May 2014.

SELF-CARE NEEDS IN PATIENTS WITH PHYSICAL IMMOBILIZATION

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ABSTRACT

Introduction: The quantity of unfulfilment of self-care in patients with physical immobilisation can decrease the quality indicator of nursing care. Self-care for physically immobilised patients is affected by basic condition factors. The study aimed to analyse the factors that can affect the fulfilment of self-care needs in patients with physical immobilisation. **Methods:** The study design was descriptive cross-sectional, with purposive sampling technique and the samples were 36 nurses and 36 physically immobilised patients. The independent variable was the fulfilment of self-care needs. Dependent variables were patient demography (age, sex), nurse (knowledge, action, motivation), and health care factors (occupation design/nursing care method). The instrument used was a questionnaire and observation form. Data were then analysed using double linear regression analysis, with significance α ≤ 0.05. **Results:** From the double linear regression test result was obtained p-value (Sig) = 0.000 R Square = 0.889. Partially it was obtained p-value of age p(sig)=0,005, sex p(Sig)=0.038, knowledge p(Sig)=0.889, action p(Sig)= 0.000, and motivation p(Sig)=0.003. **Conclusion:** Factors of patients (age, sex) and nurses (action, motivation) influence the fulfilment of self-care needs for patients with physical immobilisation. However, nurses' knowledge does not have any influence. The study result can be considered as input for nurses in developing the quality of nursing care in the fulfilment of self-care needs.

Keywords: basic conditioning factor, physical immobilized patient, self-care

INTRODUCTION

Basic human needs are the focus in nursing care. Physical needs are the greatest needs, including nutrition, rest, oxygen, elimination and sexual activity, and should be fulfilled more; therefore, the nurse must have the ability and knowledge regarding the fulfilment of basic human needs, with the ability to monitor and follow the development of the patient in carrying out the activities of daily life to meet the basic needs, especially in patients with immobilisation (Damayanti 2010). Orem (1979, cited in Galegos, 1997) states that personal care (self-care) as an activity of daily life is made to meet the physical needs. Self-care is influenced by factors of the basic conditions (basic conditioning factor). These factors are classified into 3 categories, namely individual factors (age, gender, stage of development), factors of individual situations with family and social group (orientation sociocultural and family systems, and placements factor, health status, health care system/health, lifestyle, environment, and the availability and adequacy of resources). Patients' physical immobilisation needs, especially the needs of self-care, cannot be met without the help of a nurse; the nurse must establish a therapeutic relationship with the patient in order to create a relationship of trust and caregivers for better understanding the needs of the patient (Thistle 2010).

Immobility or immobilisation is the inability to move freely due to a condition whereby the movement is interrupted or limited (Potter and Perry 2013). Immobilisation is an inability to transfer or change position or bed rest for 3 days or more, with the motion of the anatomical body disappearing due to changes in physiological functioning (Setiati et al. 2015). It prevents immobile patients with physical immobilisation from meeting their own needs independently. Nurses and family members should assist in the fulfilment of their needs, including the self-care needs (Thistle 2010).

Nurses have some role in carrying out their duties in accordance with the rights and responsibilities that exist (Asmadi 2008). One of the nurse's roles is as a care provider. The role of the nurse as care provider must be implemented comprehensively and completely, not just focusing on the actions of promotion but also on preventative measures such as the implementation of personal hygiene in self-care needs. The role of the nurse as care provider in the implementation of personal hygiene will be more dominant when involving patients with physical immobilisation. It is meaningful in professional nursing care in accordance with the rules of nursing as a profession. One of the characteristics of the profession is oriented to service using expertise for the sake of the needs of patients, including the fulfilment of basic needs (Hidayat, 2008).

Based on Gunadi (2001), at Cipto

Mangunkusumo Orthopedic Surgery suggests that nurses have not implemented to give self-care needs optimally. Another study states that the role of nurses in the implementation of personal hygiene according to the patients' perceptions on physical immobilisation showed that as many as 64 respondents (45.4%) found it to be poor (Sulistyowati and Hand, 2012).

Based on the initial survey conducted by researchers during two weeks in November 2016, in the inpatient unit Graha Afiyah RSU Haji Surabaya Nuur data showed that there were as many as 21 patients with physical immobility. Patients' self-care needs (bathing, eating, dressing, and elimination) were not fulfilled by 90% (19 patients), and self-care needs were met by 10% (2 patients). The results of interviews with several nurses mentioned that self-care needs are unfulfilled because the implementation takes quite a long time. For example, to meet the needs of self-care (bathing and attiring) requires approximately 30 minutes per patient. From the observation it was found that 10% (2 patients) of self-care needs were delivered by nurses and 90% (19 patients) of self-care needs were met by family members and some were not delivered by the family. We conducted an initial survey and found that the daily average was 11 patients with partial dependency care, and 2 patients with total dependency care. Based on the interviews with several nurses, it was also found that nurses rarely address the self-care needs of patients, especially for personal hygiene, because they consider that it can be done by families. In addition, nurses tend to prioritise dependent and collaborative interventions rather than fulfilling the basic needs of patients. It causes the unfulfilled self-care needs of patients with physical immobilisation.

A self-care deficit problem would influence body hygiene such as skin infections, altered circulatory system, uncomfortable and less confident. From the results of the Community Satisfaction Index (CSI) data at an inpatient ward in one of a public hospital in Surabaya in 2010 were in the good category (7.78%), but nursing care had the lowest value of 2.91 compared to medical and pharmacy services. It was found that there was an increasing number of complaints due to unfulfilled personal hygiene needs from 2010 to 2016. The existence of this phenomenon proves that the implementation of nursing care still is not optimal, especially in self-care needs, thus greatly affecting the quality of service of health care.

Analysis of the factors affecting self-care needs could be conducted as problem solving in patients with physical immobilisation. Patients could understand the most dominant factors and appropriate interventions to fulfil their self-care needs. Thus, the aim of this study was to analyse the factors that can affect the fulfilment of self-care needs in patients with physical immobilisation.

MATERIALS AND METHODS

This study design was cross-sectional, where research is done by focusing on the time of measurement as well as observation of the independent and dependent variable data at one time only. Independent variables and the dependent variable were rated simultaneously and there was no follow-up (Nursalam, 2013).

The population in this study was all patients with physical immobilisation treated in Graha Nuur Afiyah Inpatient RSU Haji Surabaya on 2nd, 3rd and 4th floors, with the total respondents numbering 36 patients and 42 nurses. Sampling was selected by purposive sampling, to obtain the patient and nurse respondents who met the inclusion criteria, totalling 36 respondents. The data were analysed using multiple linear regression test with a significance level of $p < 0.05$.

This study has been conducted with ethical clearance by the Ethics Commission, Faculty of Nursing, Universitas Airlangga. The ethical principles applied in this study include the benefiency principle, the principle of respect for human diginity, justice ti right principle, and the principle of right to freedom.

RESULTS

This section will present the results of the study based on factors of patients towards self-care needs, implementation of nursing care and fulfilment of self-care needs.

Table 1 shows that most respondents were elderly with an age range between 56-65 years as many as 16 people (44.4%) and the majority of the patients were male with as many as 19 people (52.8%).

Based on Table 2, showed that most of the respondents had good knowledge of as

Table 1 Distribution of factors of patients toward self-care needs in patients with physical Immobilization

Variable	Freq	Percentage (%)
Age (years)		
26-35	5	13,9
36-45	5	13,9
46-55	4	11,1
56-65	16	44,4
>65	6	16,7
Total	36	100,0
Sex		
Male	19	52,8
Female	17	47,2
Total	36	100,00

Table 2 Distribution of factors of nurse toward self-care needs in patients with physical Immobilization

Variable	Frequency	%
Knowledge		
Poor	0	0
Fair	7	19,4
Good	29	80,6
Total	36	100,00
Intervention		
Poor	19	52,8
Fair	9	25,0
Good	8	22,2
Total	36	100,00
Motivation		
Poor	13	36,1
Fair	21	58,3
Good	2	5,6
Total	36	100,00

many as 29 people (80.6%), acts less as many as 19 people (52.8%), and motivation that are as many as 21 people (58.3%) in meeting the needs of self-care (self-care) in patients with physical immobilisation.

Table 3 shows that in the implementation of nursing care methods based on role nursing unit manager, primary nurse, associate nurse, and teamwork, the average was poor.

Table 4 shows that most respondents with physical immobilisation (72.2%) were not satisfied in terms of their self-care needs (self-care). Most patients (41.7%) had unfulfilled self-care needs for eating, elimination was 26 patients (72.2%), attiring in a total of 27 patients (75%), and the elimination a total of 27 patients (75%).

Based on the test results ANOVA p-value (Sig.) = 0.000, it indicates that the variable age of the patient, gender of the patient, the nurse's knowledge, the intervention of nurses and nurse motivation simultaneously affect self-care in patients with physical immobilisation. The coefficient of determination (R Square) = 0.889 88.9%; this means that care needs (self-care) in patients with physical immobilisation can be explained by patient age, gender of the patient, the nurse's knowledge, the actions of nurses and nurse motivation, while the remaining 11.1% (100% - 88.9% = 11.1%) can be explained by other variables that are not included in this study.

The partial test results showed that the patient's age variable with p value (Sig.) 0.005. It means that H1 was accepted; age significantly affects patients' care needs (self-care) in patients with physical immobilisation. Patients' gender variable p value (Sig.) 0.038; thus, H1 is accepted, which means that the sex

Table 3 Implementation of nursing care methods

Implementation of nursing care methods	Freq (%)	Classification
Graha Nuur Afiyah 2nd floor		
Duty and responsibility of Nurse Leader	23,3	Poor
Duty and responsibility of Primary Nurse	26,1	Poor
Duty and responsibility of associate nurse	21,7	Poor
Teamwork	29,0	Poor
Total	100	
Graha Nuur Afiyah 3rd floor		
Duty and responsibility of Nurse Leader	22,2	Poor
Duty and responsibility of Primary Nurse	26,0	Poor
Duty and responsibility of associate nurse	19,3	Poor
Teamwork	29,6	Poor
Total	100	
Graha Nuur Afiyah 4th floor		
Duty and responsibility of Nurse Leader	23,1	Poor
Duty and responsibility of Primary Nurse	27,2	Poor
Duty and responsibility of associate nurse	21,7	Poor
Teamwork	28,0	Poor
Total	100	

Table 4 Fulfilment of self-care needs in patients with physical immobilization

Self-care items	Freq	(%)	Classification
Eating unfulfilled	15	41,7	Poor
Eating fulfilled	21	58,3	Poor
Total	36	100	
Bathing unfulfilled	26	72,2	Poor
Bathing fulfilled	10	27,8	Poor
Total	36	100	
Attiring unfulfilled	27	75,0	Poor
Attiring fulfilled	9	25,0	Poor
Total	36	100	
Elimination unfulfilled	27	75,0	Poor
Elimination fulfilled	9	25,0	Poor
Total	36	100	

of the patient significantly influences the care needs (self-care) in patients with physical immobilisation. Nurses' knowledge variable p value (Sig.) 0.889; thus, H1 is accepted, so nurses' knowledge does not significantly affect the care needs (self-care) in patients with physical immobilisation. Nurse implementation variable p value (Sig.) 0.000 means that actions significantly affect the care needs (self-care) in patients with physical immobilisation. Nurses' motivation variable p value (Sig.) 0.003 means that actions significantly affect the care needs (self-care) in patients with physical immobilisation. The results showed that the most dominant variable was factors of nurses, with standard regression koefisien 0.523; the nurse care implementation is able to explain the variable Y (self-care) amounting to 44.2%, while the patient factors, the dominant variables (factors nurse) (number 3), are the age of the standard regression coefficient -0.270, wherein the variables of age are able to explain the variable Y (self-care) of 21.5%.

DISCUSSION

Correlation between patient's age and self-care needs in patients with physical immobilisation

Based on the results of the research, most respondents aged 56-65 years reported that the patient care needs (self-care) in patients with physical immobilisation are not met. From the test results, statistical regression analysis of patients' age variable (X1) has a significant correlative relationship partially or simultaneously to variable care needs (self-care) (Y).

Hermawati (2016) showed that most respondents were over 50 years old. Based on statistical test results, the p value was 0.006, which means that there was a significant correlation between age and self-care related to self-care in patients undergoing hemodialysis.

Orem (2001, cited in Purwoastuti, 2016) found that infants, the elderly and sick people need assistance to meet their self-care needs. The age factor is related to people's experience in dealing with various stressors, the ability to use support resources and skills in coping mechanisms (Stuart & Laraia 2005). The self-care ability of a person is affected by age, stage of development, life experiences, socio-cultural background, health, and resources (Marriner 2001). Normal growth and development according to age include changes in the biological, cognitive, and socio-emotional functions that occur during the life of the individual (Santrock 2007). Growth includes physical changes that have occurred from the prenatal period to adulthood, which continue to be progress or setbacks. The development is dynamic and involves a progression and a decrease (Berger 2005). In the elderly, the aging process occurs in a linear manner and can be described in three phases:

Table 5 Factors affecting the fulfilment of self-care needs in patients with physical immobilization

Independent variable	Konstanta	Beta (Coeficien Regression)	R	R *Square*	P-value (Sig.) ANOVA (Simultant)	P-value (Sig.) (Partial)
Age		-0,093				0,005
Sex	0,702	0,147	0,943	0,889	0,000	0,038
Knowledge		-0,010				0,889
Action		0,289				0,000
Motivation		0,180				0,003

impairment, functional limitations and disability, and handicap will be experienced simultaneously with the process of degeneration (Bondan 2006). Age will lead to changes in the structure and physiological bases of various cells / tissues / organs and systems in the human body. This process causes physical and psychological deterioration. Setbacks to psyche that occur in the form of an increase in emotional sensitivity, decreased arousal, increased interest in self-esteem, lack of interest in the appearance, increasing interest in the material, and interest in leisure activities has not changed (only the orientation and subjects are different), and there is a downward trend in taking care of themselves (Mubarak, 2009). This showed that the older the ability in self-care will be decreased so that the self-care needs of the elderly (aged 56-65 years) were unfulfilled.

Correlation between patient's sex and self-care needs in patients with physical immobilisation

The survey results revealed that most respondents were male patients and the self-care needs of patients with physical immobilisation are not met. The test results obtained that statistical regression analysis of patients' gender variable (X2) shows a partial significant correlation to the care needs (self-care) (Y) variable in patients with physical immobilisation.

Research conducted by Mahanani (2013) also explained that calculations using correlation Chi-square test with a level of 95% obtained p value 0.008 <0.05, so the hypothesis is accepted, which means it can be seen that there was a relationship between gender and care specialising in leprosy patients at Blora in 2011. Sex includes the physical traits, character and different properties that affect the cleanliness of a person (Stuart & Laraia, 2005). Problem-solving skills, analytical skills, competitive urge, motivation, sociability and ability to learn are the same between men and women (Rohman, 2007). Gender relates to the role of life and the different behaviour between men and women in society. In maintaining their health, women typically fare better than men. Differences ill behaviour are also influenced by gender, as women more often take care of themselves than men.

Hermawati's study (2016) explains that the statistical test results with p value 0.793 mean that there was no significant relationship between gender and self-care. In self-care, gender is one of the factors that influence self-care. Women usually tend to be more concerned with their physical appearance than men.

Correlation between nurses' knowledge and self-care needs in patients with physical immobilisation

The results of this study found that most respondents felt that nurses have good knowledge of the self-care needs of patients and care needs (self-care) of patients with physical immobilisation are unfulfilled. The regression analysis showed that nurses' knowledge (X3) had no significant correlation to the care needs variable (self-care) (Y) in patients with physical immobilisation.

Notoatmodjo (2007) explained that knowledge is a process of knowing what happens after someone did sensing through the five senses of sight, hearing, smell, taste, and touch on a specific object. Nurses should have the knowledge to give professional nursing care. The level of knowledge of each individual is different. It is influenced by many factors, including age, level of education, resources, experience, economic, environmental, and socio-cultural (Notoatmodjo, 2007). In the field of nursing, nurses' knowledge can continue to evolve with different variations depending on experience, education and nursing initiatives in reading literature or other information sources. The depth and breadth of nurses' knowledge can also affect their ability of critical thinking and their ability to deal with problems (Potter & Perry, 2010).

Research conducted by Darmiati (2008) in the city of Napier showed that there was a relationship between knowledge to require the needs of personal hygiene. Patients with immobilisation could not take care for themselves; patients need assistance to fulfil self-care. In this case, nurses' awareness needed to be more attentive and more active. Self-care is often considered a trivial issue, but it also affects a person's health and psyche; therefore, the nurse should always want to

motivate patients to maintain self-care (Nurhaeni 2012).

Level achieved perfection nursing care depends on the willingness, ability, knowledge and skills are both nurses (Nursalam 2016). Based on this theory, researchers assume that even if a nurse at Graha Nuur Afiyah RSU Haji Surabaya has a level of knowledge in the range of sufficient to good, if it is not supported by a strong willingness to take care, it will affect the nurse in the implementation of caring for the needs of the patients, which can cause unfulfilment of the patient's needs, especially for a patient with physical immobility.

Correlation between nurse's implementation of self-care needs in patients with physical immobilisation

The survey showed that most nurses had less action in giving the needs of self-care in patients with physical immobilisation. From the statistical regression analysis the nurse action variable (X4) has a significant correlation partially or simultaneously with variable care needs (self-care) (Y) in patients with physical immobilisation. The test results show that the action variable is the dominant factor in influencing the self-care needs (self-care) of patients with physical immobilisation.

Orem (2001, in Aligood, 2014) explains that the theory of the nursing system describes and explains how patients' self-care needs are fulfilled by nurses or patients themselves; Orem argues about the fulfilment itself, the needs of the patient, and the patient's ability to perform self-care. Measures to help meet the needs of personal hygiene and self-care are not a skill that can only be learned in a short time; there is a need for customs, experience and good communication. Nurses always perform personal hygiene measures to be more skilled in providing services and will get excellent results (Sandyarman 2014). This is according to research by Gunadi (2001) on the fulfilment of self-care performed by nurses for immobilised patients; services to provide personal hygiene measures are maximised if the nurse has a good skill in providing nursing care. Skill can be increased with training and improved ability to get the maximum results. The result showed that the majority of nurses less action care needs (self-care); thus, patients' care needs are unfulfilled. Based on interviews with several nurses during the initial survey, the exercise of self-care (self-care), especially personal hygiene, among others requires longer periods of time, because nurses have to finish other nursing care. In addition, nurses rarely address the self-care needs of patients, especially for personal hygiene, because they consider that it can be done by families and caregivers and they only help if needed. Nurses tend to prioritise other independent and collaborative action other than to address the basic needs of patients. It could cause the unfulfilment of self-care in patients with physical immobilisation.

Maria (2010) said that immobilised patients depend on the self-care nurse, so the nurse providing personal hygiene must have the desire to achieve satisfactory results. Patients will be satisfied if the perception is equal to or higher than expected. Excellent nursing in providing self-care will lead to the satisfaction of the patient. Damayanti (2010) showed that there was a significant difference in patient satisfaction before and after the implementation of personal hygiene in patients with immobilisation.

Based on several studies and theories that have been described and facts obtained during the study, the implementation or intervention is a dominant factor in determining self-care needs. Nurses are expected to provide self-care by both the patient and the nursing care according to the standards that have been made, in order to increase the satisfaction of patients and to prevent negative impacts on the physical immobilisation as a result of unfulfilled demand for self-care.

Correlation between nurse's motivation and self-care needs in patients with physical immobilisation

Based on the results, it can be seen that most nurses had moderate and poor motivation in fulfilling the self-care needs of patients with physical immobilisation. Statistical regression analysis showed that nurses' motivation variable (X5) has a significant correlation, partially or simultaneously, to variable care needs (self-care) (Y) in patients with physical immobilisation.

According to Suarli (2009), motivation is one of the factors that may affect performance. Performance of the nurses to fulfil patient needs. Riyadi and Kusnanto

(2007) stated that in improving the quality of health services, every nurse should have high motivation for obtaining a good performance. The higher the motivation of the nurse, the higher the performance of nurse will be.

Motivation is a feeling or a thought that drives someone to do something or the exercise of power, especially in the action (Sortell & Kaluzny, 1994 in Suarli and Bahtiar, 2009). Motivation is composed of intrinsic and extrinsic motivation. One of the most visible is intrinsic motivation. Nawawi (2004) defined intrinsic motivation as a condition that encourages an activity that is within in the activity itself. Conditions shape awareness about the meaning and benefits of an action or activity, either for themselves or others and the wider community. Raatikainen (1997) in his research found that someone who gets the willingness to become a nurse has professional knowledge and motivation and understands the actions of nursing and also can be a source to provide support for the patient. Nursing services can be effective when there is motivation as the driving passion, driving someone to do something desired. It will be well maintained when there is a good communication (Mundzakir 2006).

This study demonstrates that the motivation of nurses was poor or fair. Poor motivation leads to the lower performance of nurses in terms of addressing self-care needs that should be independent nurse care. Based on the demographic data, half of the nurses have also had a long working life of 16-20 years. Maryoto (1990, in Ismael, 2009) argues that if a person has not worked long enough, it will result in the poor, among others not yet appreciate the work that they are responsible. The tenure of the person that is too long in an organisation is a symptom that is not healthy. Possible consequences include boredom of doing the same job for a long time, passivity and resignation of motivation and initiative in work, affecting one's creativity because there is no challenge. Job satisfaction is relatively high at the time of first starting but declines gradually over the next 5-6 years and increases the satisfaction to a peak after 20 years. Such long working lives will also affect the decline in motivation of nurses in terms of patients' self-care needs. In addition, based on the items on the questionnaire respondents about C11 nurses, it was found that the majority of respondents stated that the salary / award obtained from the hospital is not in accordance with the toil issued; in this case, when the nurse helps to meet patients' care needs. Landy and Becker, cited in Nursalam (2016), grouped into 5 categories of motivational theories, one of which is the theory of justice. The theory of justice is based on the assumption that the main factor in the motivation of the work is the evaluation of the individual or the fairness of awards received. Individuals will be motivated if they get balanced with the business they do.

Various explanations above can explain the decline in the motivation of nurses to meet the self-care needs of patients due to the average age of nurses in the room and the imbalanced awards received by nurses, thus causing the self-care needs of patients to remain unfulfilled.

Correlation between nursing care and self-care needs in patients with physical immobilisation

Based on the survey results, the conduct of the nursing care method is in fair range. Murwani (2008) stated in the Health Sciences Consortium in 1989 that the role of nursing is that of a care giver. The role as care giver of nursing care can be done when nurses pay more attention to the basic human needs through the provision of nursing care using the nursing process, so nursing diagnosis can be planned and implemented appropriately in accordance with the level of basic human needs, then evaluated for its development. Nursing care is carried out from simple to complex. In this study, nurses play an important role in nursing care, especially in the self-care needs of patients. The results showed that the nursing care is in the fair range. This is because each element of the nursing care method (Head Nurse, Primary Nurse, and Associate nurse) was not optimal in carrying out its duties and responsibilities. From the analysis of questionnaires, it is clear that the duty and responsibility of the Head Nurse was not optimal. This is indicated by the fact that the head of the room sometimes (with frequency 1-2x a week) had discussions with a PN or AN to provide guidance on the issue of self-care needs, and rarely undertook supervision on the fulfilment of self-care needs. In addition, the duties and responsibilities of the PN were also not

optimal, as indicated by the PN occasionally during the study evaluating nursing care with regard to self-care needs, as well as rarely meeting with patients and families to discuss the issue of self-care. The AN observed during the study sometimes performed acts addressing self-care needs. This is in line with the results of interviews conducted by the researchers as a preliminary survey on some of the nurses; the AN only performed these activities when families of patients asked for help to meet the needs of self-care such as personal hygiene (bathing and dressing) and elimination.

Craven, in Agustin (2002), explained that the quality of health care in hospitals is determined by the circumstances of nurses both in terms of quantity and quality. Nurses in providing nursing care to patients using nursing care management is the implementation of the nursing process. The nursing process is the basis of nursing practice that applies knowledge and theory in practice. Pinedendi (2016) explained that there was a significant impact on the implementation of nursing care in the patients' self-care deficit (p = 0.003); personal hygiene before and after intervention was in the fair category.

It could be concluded that the implementation of the nursing care method may contribute to addressing patients' care needs. Nurses are expected to be able to apply the method to give nursing care optimally and carry out their duties and responsibilities.

CONCLUSIONS

Based on the results of research and discussio Based on the results of the research and discussion, the researchers can make several conclusions that patient factors, nursing factors and health service factors can determine the care needs (self-care) in patients with physical immobilisation. Patient factors, especially in the elderly (55-65 years), will impact on reducing self-care needs (self-care) in patients with physical immobilisation, while the female gender will be affected by increasing care needs (self-care) in patients with physical immobilisation. In nursing factors, nurses' increased knowledge does not affect increasing care needs (self-care) in patients with physical immobilisation (self-care needs are met). Nurses with less motivation will impact on reducing self-care needs (self-care) in patients with physical immobilisation (self-care is unfulfilled). In the health service factors, the implementation of the primary nursing care team at Graha Nuur Afiyah was in the fair range, which probably has an impact on reducing self-care needs (self-care) in patients with physical immobilisation (self-care needs are not met).

Improvements to the quality of nursing services should also be supported by good nursing performance. It was suggested that the hospital should hold seminars, workshops and training, especially with regard to fulfilling the self-care needs of patients. Subsequent researchers could expand on the sampling technique by cluster and stratified sampling, and may make observations on meeting the needs of self-care with greater observational frequency.

REFERENCES

Alligood, MR. 2013. *Nursing theory: utilization & application, Fifth edition*. St Louis, Missouri: Elsevier Mosby.

Alligood, MR. 2014. *Nursing Theorists and Their Work, Eight Edition*. St Louis, Missouri: Elsevier Mosby

Alimul, A. 2009. *Pengantar Kebutuhan Dasar Manusia: Aplikasi Konsep dan Proses Keperawatan, Buku 1*. Jakarta: Salemba Medika

Anonemous. 2012. *Nursing Theoris A Companion To Nursing Theori AndModels* http://currentnursing.com/nursing_theory/self_care_deficit_theory.html

Asmadi. 2008. *Konsep Dasar Keperawatan*. Jakarta: EGC

Basudewo, Y., 2012. *Hubungan Motivasi Intrinsik Menjadi Perawat dengan Caring Perawat di RS Mardi Waluyo Metro Lampung Tengah* (Doctoral dissertation, Program Studi Psikologi FPSI-UKSW)

Berger, K. (2005). *The Developing Person: Throught The Life Span*. New York: Worth.

Damayanti, M.D. 2010. Efektifitas Tindakan Personal Hygiene Terhadap Tingkat Kepuasan Pasien Imobilisasi di RS. Mardi Rahayu Kudus (*Doctoral disertation*, Universitas Diponegoro)

Darmiati. 2008. Faktor-Faktor yang

Berhubungan dengan Pemenuhan Kebutuhan Personal Hygiene Pasien Rawat Inap Makasar.

Depkes RI (2009). Profil Kesehatan Indonesia. Jakarta: Depertemen Republik Indonesia

Gallegos, EC. 1997. *The Effect of Social, family, and Individual factors on Self-care Agency and Self-care of Adult Mexican Women. Desertasi, Wayne State University*.

Graven and Himle. 2000. *Fundamental of Nursing, Human Health and Function, third edition*. Philladelpia: J.B. Lippincolt

Gunadi. 2002. Pemenuhan Perawatan Diri yang Dilakukan oleh Perawat pada Pasien yang Immobilisasi. Tesis. Laporan Penelitian, Universitas Indonesia

Haryono, I. 2011. Hubungan Antara Beban Kerja Perawat Dengan Pemenuhan Kebutuhan Personal Hygiene (Kebersihan Diri) Pasien Di Ruang Pavilyun Lantai 3 Rumah Sakit Umum Haji Surabaya. Skripsi. Universitas Muhammadiyah Surabaya

Hermawati., Hidayati, Titiek., Chayati, Nur. 2016. Faktor-Faktor Yang Mempengaruhi Self-care Diet Nutrisi Pasien Hemodialisa Di Rsud Dr. Moewardi Surakarta. STIKES 'Aisyiyah Surakarta. *Gaster Vol. XIV No. 2 Agustus 2016*

Hidayat, A.A. 2009. *Metode Penelitian Keperawatan dan Teknik Analisis Data.* Edisi Pertama. Jakarta: Salemba Medika

Ismael. 2009. Hubungan Karakteristik Perawat Terhadap Penatalaksanaan Klien Prilaku Bunuh Diri di RSJ.Prof. Dr. Hb. Sa'anin Padang Tahun 2009. Sumatera Barat : Program Studi DIII Keperawatan Stikes Perintis Bukittinggi

Johnson, B. 2015. *An Introduction to Theory and Reasoning in Nursing*. *Wolters Kluwer Lippincott Williams Wilkins*

Khasanah, S., Susanti, I.H., Safitri, M., Wita, W. and Tiva, T. 2014. Hubungan Tindakan Mandiri Personal Hygiene Oleh Perawat Dengan Tingkat Kepuasan Pasien Imobilisasi Di Ruang Rawat Inap Rsud Dr. R Goetheng Taroenadibrata Purbalingga. *Viva Medika*,*7*(13).

Mangkunegara, P.A.A. 2009. *Manajemen sumber daya manusia*. Cetakan kesembilan. Bandung : Remaja Rodakarya

Marlina, A. 2011. Faktor – Faktor Yang Berhubungan Dengan Pemenuhan Kebutuhan Personal Hygiene Pasien Rawat Inap Di Ruang Interna Rumah Sakit Umum Sawerigading Kota Palopo Periode April - Mei 2011. Skripsi

Marriner, A. (2001). Nursing Theorist and Their Work. (Alih Bahasa: Ekawijaya, I. & Riyono, R.). India: MosbyCompany.

Muhlisin, A. & Irdawati, 2010. Teori self-care dari Orem dan pendekatan dalam praktek keperawatn. *Berita Ilmu Keperawatan*, 2(2), pp.97–100

Natalia, MN. 2014. Pemberian Tindakan Personal Hygiene Terhadap Kepuasan Pasien Immobilisasi Pada Asuhan Keperawatan Ny S dengan Efusi Pleura Di Ruang Aster 5 RSUD Dr Moewardi Surakarta

Notoatmodjo, S. 2012. *Metodologi Penelitian Kesehatan*. Jakarta: Rineka Cipta

Notoatmodjo, S. 2014. *Ilmu Perilaku Kesehatan*. Jakarta: Rineka Cipta

Nurhaeni, H., Suryati, T. R. L., Taufiqurrachman, K. P., Manurung, S., & Chairani, R. 2012. Pengaruh Intervensi Personal Higiene Terhadap Kepuasan Pasien Immobilisasi. *Caring*, *1*(03), 190-196

Nursalam. 2014. *Metodologi Penelitian Ilmu Keperawatan Pendekatan Praktis, Edisi 3*. Jakarta: Salemba Medika

Nursalam. 2016. *Manajemen Keperawatan Aplikasi dalam Praktik Keperawatan Profesional Edisi 5*. Jakarta: Salemba Medika

Orem, D.E. 2001. *Nursing Concept of Practiced*. St. Louis: the CV Mosby Company

Orem, A. T., & Wisma, T. 2007. Aplikasi Teori *Self-Care Deficit* Orem dalam Konteks Tuna Wisma (Studi Literatur) (The Application of Orem ' s Self-care Deficit in Homeless Setting) Megah Andriany *, *1*

Pancaningrum, D. 2011. Faktor-Faktor Yang

Mempengaruhi Kinerja Perawat Pelaksana Di Ruang Rawat Inap Dalam Pencegahan Infeksi Nosokomial Di Rs Haji Jakarta Tahun 2011. Tesis. Universitas Indonesia

Pinedendi, Novita., Rottie, Julia Villy., Wowiling, Ferdinand. 2016. Pengaruh Penerapan Asuhan Keperawatan Defisit Perawatan Diri Terhadap Kemandirian Personal Hygiene Pada Pasien Di Rsj. Prof. V. L. Ratumbuysang Manado. *e Journal Keperawatan (e-Kp)* Vol 4 No 2, Juli 2016

Potter & Perry. 2013. *Fundamentals of Nursing Eighth Edition.* Missouri: Elsevier Mosby

Riyadi, Sujono, Harmoko. 2012. *Standard Operating Procedure* dalam Praktik Klinik Keperawatan Dasar. Yogyakarta: Pustaka Pelajar

Santrock, J. 2007. *Life Span Development.9th Ed.*New York: McGraw–Hill.

Setiadi. 2007. *Konsep dan Penulisan Riset Keperawatan*. Yogyakarta: Graha Ilmu

Setiati, S. 2015. *Penatalaksanaan Imobilisasi dan Komplikasi Akibat Imobilisasi pada Orang Usia Lanjut*. Divisi Geriatri Departemen Ilmu Penyakit Dalam FKUI RSCM

Slevin, O & Basford, L. 2006. *Teori dan Praktik Keperawatan Pendekatan Integral pada Asuhan Pasien.* Jakarta: EGC

Stuart, G. W. & Laraia, M. T. 2005. *Principle and Practice of Psychiatric Nursing. 6th Ed*. Philadelphia: MosbyInc.

Suarli, S & Bahtiar, Y. 2009. *Manajemen Keperawatan dengan Pendekatan Praktis*. Jakarta: Penerbit Erlangga

Sulistyowati, D. & Handayani, F. 2012. Peran Perawat Dalam Pelaksanaan Personal Hygiene Menurut Persepsi Pasien Imobilisasi Fisik. *Jurnal Nursing Studies*, *1*, pp.169-174.

Susanti, H. 2010. Defisit Perawatan Diri Pada Klien Skizofrenia: Aplikasi Teori Keperawatan Orem. *Jurnal Keperawatan Indonesia*. Http://Jki.Ui.Ac.Id/Index.Php/Jki/Article/Viewfile/237/Pdf_166

Sandyarman, I Nyoman Gede. 2014. Hubungan Personal Hygiene Oleh Perawat Dengan Tingkat Kepuasan Pasien Imobilisasi Di Rumah Sakit Jember Klinik. *Artikel Jurnal*. Universitas Muhammadiyah Jember

Taylor, S., & Renpenning, K. 2011. *Self-care Science, Nursing Theory and Evidence Based Practice.* New York: Springer Publishing Company, LLC

Tommey, A.M., dan Alligood, M.R. 2006. *Nursing Theory And Their Work*. Missouri: Mosby

Uno, H. 2011. *Teori Motivasi dan Pengukuranya: Analisis di Bidang Pendidikan*. Jakarta: Bumi Aksara

Wasis. (2008). *Pedoman Riset Praktis untuk Profesi Perawat*. Jakarta : EGC.

Wahyudi, AS & Wahid, A. 2016. *Buku Ajar Ilmu Keperawatan Dasar*. Jakarta: Mitra Wacana Media

widuri, H. 2010. *Kebutuhan Dasar Manusia: Aspek Mobilitas da Istirahat Tidur.* Yogyakarta: Gosyen Publishin

COMPETENCE OF THE CIVIL SERVICE POLICE UNIT (CSPU) IN PROVIDING EMERGENCY FIRST AID ASSISTANCE

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ABSTRACT

Introduction: In the year 2014 there were 456 disasters in Indonesia, comprising 227 natural disasters, 197 non-natural disasters and 32 social disasters. The community is expected to be well prepared in accordance with their respective capacities, and this includes the Civil Service Police Unit (CSPU), which must be competent in providing emergency first aid. The aim of this study is to analyse the effect of emergency first aid training on the competence of CSPU in providing emergency first aid assistance in the Surakarta region. **Methods:** This study used a pre-experimental technique using a pre-post test group design. The sample consisted of 107 respondents who were recruited by total sampling. Variables in this study were competencies in handling emergency first aid assistance including knowledge, attitute and practice. Data were collected by questionnaire and analysed using Wilcoxon signed-rank test with a p-value of 0.05. **Results:** There were significant differences in scores on knowledge, attitudes, and practice in providing emergency first aid assistance, with a p-value of 0.012 for knowledge, 0.000 for attitude and 0.001 for practice, respectively. **Conclusions:** Emergency first aid training is urgently needed for CSPU members that are ever directly in charge in the community in any situation. The CSPU must have the first aid competence to support its performance.

Keywords: Civil Service Police Unit, Competency, First Aid Emergency Training.

INTRODUCTION

Indonesia is known as an archipelago country located in the Ring of Fire area, which has the potential for a very varied array of disasters (Intarti, Fitrinita, Widyanto, & Simarmata, 2013). In addition, the large population with various ethnic, cultural, religious and economic strata can also be risk factors for disaster. When looking at the various potentials for disaster, Indonesia becomes a country with very high level of potential hazards (potency) and various forms of natural disaster, human disaster or complex emergency (Head of BNPB Regulation No. 4 of 2008).

The Health Crisis Center of the Ministry of Health of the Republic of Indonesia noted that in the five years since 2010, Indonesia experienced 1,907 disasters (Mediastianto, 2015). Of these, 1,124 (59%) were natural disasters, 626 (33%) were non-natural disasters and 157 (8%) were social disasters. In 2014 there were at least 456 disasters, and these too were dominated by natural disasters 227 times (49%), with non-natural disasters occurring 197 times (44%) and social disasters 32 times (7%). The percentage of social disasters is not too big, but the number of events needs to get attention.

Various elements of society must be prepared according to the proportion of tasks and their respective functions. Research conducted by Djalali, Khankeh, Öhlén, Castrén, and Kurland (2011) in Iran stated that the victims of the earthquake were transported to a health facility without triage. Some factors that become obstacles include the lack of a well-organised team and a structured procedure. As a result, the victims cannot get the right handling according to priority and cannot get directly transported. This is one of the factors contributing to the high death rates of victims after the earthquake in Iran.

The CSPU in Indonesia is a Local Government Civil Police whose main duty is to enforce local regulation and maintain public order and peace in society by implementing decentralization. The CSPU is expected to be able to conduct first aid correctly to victims of any types of disasters including clashes. In reality, there is no evidence that first aid training has been provided to them. Thus, the CSPU members need to be equipped with basic emergency or first aid training so that their role can be empowered. The other critical aspects according to the appendix are prioritizing actions and deciding on action strategies. These skills highly contribute to effective emergency care treatment. It is therefore clear that much attention needs to be paid to first aid training to empower each CSPU to become highly competent. Further injuries and even fatalities as a result of improper handling can then be avoided. The existing phenomenon indicates that the CSPU

has not been equipped with first aid competence that complies with the field of preparedness and prevention of emergency and disaster. As a consequence it is very risky when members of the CSPU must provide first aid. By looking at this phenomenon, the aim of this study is to analyse the effect of first aid emergency training on the competence of CSPU in providing first aid assistance in the Surakarta region.

MATERIALS AND METHODS

This study used a pre-experimental approach with a pre-post test group design. The population in this study consisted solely of members of the CSPU who were active in the city of Surakarta. The sample comprised 107 respondents who were recruited by total sampling. The independent variable was emergency first aid training, and the dependent variable was competence in providing emergency first aid assistance include knowledge, attitude, and practice. Data were collected via a questionnaire that was developed based on recommendations by the Center for Crisis Response at the Ministry of Health of Indonesia and was presented to three experts, consisting of emergency nursing practitioners and academics, who conducted a validity test. Small revisions and edits were made after being corrected by the experts until the questionnaire met the valid criteria. All respondents were trained in emergency first aid that consisted of CPR, bandaging and splinting, stabilization and evacuation. In addition, there were interviews with some respondents in order to get deeper information. The data conducted were analysed using Wilcoxon signed-rank test with a p-value of 0.05, and the results of the interview were displayed descriptively. Ethical clearance to conduct this study was granted by the ethical commitee of the School of Nursing at the Health Polytechnic of Surakarta.

RESULTS

As shown in Table 1, there were 107 respondents in total, most of whom had moderate knowledge (72%) before training. After training, there was an increase from 15.9% to 30.8% in respondents in the high knowledge category. From the statistical analysis gained using Wilcoxon signed-rank test, it can be seen that the p-value is 0.012 (<0.05). This indicates that there is a significant difference in respondent knowledge before and after the training.

From Table 2 it can be seen that before the training there were no respondents in the high attitude category, but following the

Table 1. Differences in knowledge of respondents pre- and post-intervention

No.	Knowledge	Before		After	
		N	%	N	%
1	High	17	15.9	33	30.84
2	Moderate	77	72.0	64	59.81
3	Low	13	12.1	10	9.35
	Total	107	100.0	107	100.0
Wilcoxon signed-rank test p=0.012					

Table 2. Differences in attitute of respondents pre- and post-intervention

No.	Attitude	Before		After	
		N	%	N	%
1	High	0	0	8	7.48
2	Moderate	26	24.3	41	38.32
3	Low	81	75.7	58	54.21
	Total	107	100.0	107	100.0
Wilcoxon signed-rank test p=0.000					

Table 3. Differences in practice of respondents pre- and post-intervention

No.	Practice	Before		After	
		N	%	N	%
1	High	1	0.93	2	1.87
2	Moderate	16	14.95	38	35.51
3	Low	90	84.11	67	62.62
	Total	107	100.0	107	100.0
Wilcoxon signed-rank test p=0.001					

training 7.48% of respondents had a high level in attitude. The upward trend also occurred in the moderate level of attitudes with a rise from 24% of respondents to 38.3%. In contrast, the 75.7% of respondents who initially had a low attitude category changed to 54% of respondents. From the statistical analysis using Wilcoxon signed-rank test, it can be seen that the p-value value is 0.000 (<0.05), which therefore indicates that there is a significant difference in the respondents' attitude before and after the training.

As shown in Table 3, the 84.11% of respondents in the low category reduced to 62.62% respondents following training. In the moderate level, there was an increased number of respondents after training from 14.95% to 35.51%. From the statistical analysis using Wilcoxon signed-rank test, it can be seen that the p-value is 0.001 (<0.05), which therefore indicates that there is a significant difference in respondents' practice before and after the training.

DISCUSSION

Schipper and Pelling (2006) describe the four stages of disaster management required to improve the effectiveness of emergency response as follows: continuum of prevention and mitigation, preparation and planning, decrease response and relief, and recovery. These components need to achieve the same concentration and seriousness because each stage can affect the end result. The final goal is to reduce the impact of disasters on human health and safety by delivering urgent health interventions and provision of care during and after the disaster (Sauer, McCarthy, Knebel, & Brewster). Comparative study, education and training, and simulation can be carried out when preparing and planning emergency management. Successful training will greatly impact the change in understanding of tasks and better roles, which can reduce the psychological pressure, especially during and after the operation, and even assist the mastery of future disaster management (Pederson, Gjerland, Rund, Ekeberg, & Skogstad, 2016).

Djalali, Khankeh, Ohkel, Castren, and Kurland (2011) revealed one of their findings in Iran of the involvement of military forces, especially their participation in air evacuation of victims and the provision of troops as an important source of energy. The same experience was also found in Indonesia regarding military troop preparedness before the disaster. One of the components that exist in Indonesia besides the military forces and other sources that have the potential to be prepared is the CSPU.

The main task of the police in the Republic of Lithuania is to serve the community and to ensure the safe living of citizens. It strives to be an active guarantor of public safety and not just criminal registry (Janusauskas, 2013). Safe living has a broad meaning that includes saving people from any dangerous situations. As noted in the Standard Competency Description of the CSPU (Letter of the Minister of Home Affairs, Number: 800/120/SJ year 2016) there are several units of skills or competencies and knowledge and attitudes that need to be mastered by CSPU members in order to perform their duties. One of the requirements related to the field of disaster preparedness that must be mastered by each member of the CSPU is first aid competence. According to Kundra and Cherian (2015) and Sonmez (2017), the ability to receive information and responses to knowledge integration, decision making, communication and teamwork can be assessed through simulations designed as similarly as possible to actual events. Various training is required by members of the CSPU to equip their abilities related to the various competence units that become their responsibilities. Increased knowledge through training, such as basic emergency care for special lay people or first aid in accidents, is necessary considering the tasks of the CSPU that directly relate to the community under any circumstances. Basic emergency rescue training has been shown to significantly increase the knowledge of CSPU personnel. Knowledge forms the basis for the anticipation, decision-making and handling steps of sharing actions appropriately. Mistakes in making decisions about an action can be fatal.

In-depth interviews with some respondents stated their understanding of the things that should and should not be done first time when providing first aid. Respondent 1 stated: "*Until now I did not know about first aid, so if there was a sick person on the road I would just transfer them to the hospital as soon as possible.*" Respondent 7 stated:

"*Previously, we did not know which one needed to be helped first and did not know how to provide help*". This is in accordance with a previous study conducted by Yasin, Malik, Nasreen, and Safdar (2009) where there were limited professional health personnel in disaster areas and most earthquake victims were transported from the disaster site without any initial rescue action. In fact, early rescue action is essential to restore vital bodily functions and avoid worse conditions during the transfer of the victim. Therefore, through effective emergency first aid training, the number of deaths due to lack of help before the transport of the victim will be reduced.

Increased knowledge is also proved by respondents at the time of evaluation either individually or through scenario or simulation. Respondents follow every step of the procedure when demonstrating every skill and even when performing the simulation. Kundra and Cherian (2015) added that procedural actions that follow standardized protocols can reduce morbidity and mortality rates. In this basic emergency treatment training, procedures are standardized by several institutions or organizations such as CPR as recommended by the American Heart Association (2015). During the evaluation and simulation of basic handling of the victims in emergency situations, coordination and cooperation emerged. Respondent 11 mentioned: "*We just found out there are steps on how to perform first aid during a disaster, starting with hazard identification, choosing which one should be helped and how to help together with the team.*" A similar opinion was expressed by respondent 17*:* "*Until now we did not think that working with friends and coordination is very important. Lack of coordination may not really give effective results and may even endanger the rescuer*".

Kundra and Cherian (2015) explain that the attitude domain needs to be examined to make sure whether trainees have been able to internalize the values of knowledge of attitudes and beliefs to influence professional behavior. To assess the ability of this integration, simulation method can be used. A member of the CSPU is required to have a firm attitude, be brave, disciplined, proactive, responsive, meticulous and agile. During an the emergency situation the individual must possess these attitudes and abilities. The ability to anticipate becomes the initial capacity of preparedness of the officer in providing help. Good preparation can strengthen the team's capacity, while performing complex tasks and daily training and hands-on practices provides opportunities to develop skills and adds more confidence to the roles provided (Pederson, 2016).

CONCLUSIONS

First aid emergency training is urgently needed for the CSPU that are directly in charge in the community under any circumstances. The CSPU must have first aid competence to support its performance. Stakeholders are expected to take policy measures on the strengthening of the CSPU's competence in relation to one of the requirements for the ability to master the competence of first aid as mandated by ministerial regulation. In addition, stakeholders are expected to conduct periodic evaluations of the CSPU personnel preparedness in anticipation, disaster, and post-disaster. The CSPU members are expected to conduct regular disaster preparedness exercises, so that they will be well prepared in case of disaster to reduce the impact of the disaster.

REFERENCES

American Heart Association. (2015). Highlights of the 2015 American Heart Association Guidelines Update for CPR and ECC.

Arikunto, S. (2010). *Prosedur Penelitian Suatu Pendekatan Praktek*. Edisi Revisi VI. Jakarta : Rineka Cipta.

Djalali, A., Khankeh, H., Öhlén, G., Castrén, M., & Kurland, L. (2011). Facilitators and obstacles in pre-hospital medical response to earthquakes: a qualitative study. Scandinavian Journal of Trauma Resuscue Emergency Medicine. 2011; 19: 30. Doi: 10.1186/1757-7241

Intarti, Y.R., Fitrinita, I.S., Widyanto, M.R., & Simarmata, H.A. (2013). Towards Disaster Management in Indonesia Case Studies Jakarta and Yogyakarta Provinces, International Journal of Disaster Recovery and Business Continuity Vol.4 (2013), pp.11-22. Retrieved November 20, 2017 from:

http://www.sersc.org/journals/IJDRBC/vol4/2.pdf.

Janusauskas, A. (2013). How to Develop a Professional Police Officer?Journal of Education and Human Development, Vol. 2 No. 2.

Kundra, P. & Cherian, A. (2015). Simulation for "Evaluation" and teaching "Standard operating procedures". Journal of Anaesthesiology Clinical Pharmacology. 31(2): 270–271. Doi: 10.4103/0970-9185.155208

Lampiran-Surat Edaran Menteri Dalam Negeri. Nomor : 800/120/SJ Tanggal : 15 Januari 2016 Tentang : Standar Kompetensi Jabatan Fungsional Polisi Pamong Praja. Uraian Standar Kompetensi Jabatan fungsional polisi pamong praja Retrieved September 18, 2017 from : http://bpsdm.kemendagri.go.id/web9/sites/default/files/inline-files/standar_kompetensi_polpp_final.pdf Malik, A.Y., Malik, S.A., Nasreen, G. & Safdar, C.A. (2009). Experience with mass casualties in a subcontinent earthquake. Turkish Journal of Trauma and Emergency Surgery. Ulus Travma Acil Cerrahi Derg. 15(5):487–92. Retrieved from September 2, 2017, from http://tjtes.org/eng/jvi.aspx?un=UTD-36539.

Mediastianto, E. (2015). Statistik Kejadian Bencana tahun 2015. Pusat Krisis Kesehatan Kementerian Kesehatan Republik Indonesia. Retrieved September 18, 2017 from : http://penanggulangankrisis.kemkes.go.id/statistik-kejadian-bencana-tahun-2014 .

Pederson, M.J.B., Gjerland, A., Rund, B.R., Ekeberg, O., & Skogstad, L. (2016). Emergency Preparedness and Role Clarity among Rescue Workers during the Terror Attacks in Norway July 22, 2011. Retrieved September 3, 2017 from: http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0156536

Peraturan Kepala BNPB Nomer 4 Tahun 2008 Tentang Pedoman Penyusunan Rencana penanggulangan Bencana. Retrieved September 18, 2017 from http://www.gitews.org/tsunami-kit/en/E6/further_resources/national_level/peraturan_kepala_BNPB/Perka%20BNPB%204-2008_Pedoman%20Penyusunan%20Rencana%20Penanggulangan%20Bencana .pdf

Peraturan Menteri Kesehatan Nomor 19 tahun 2016 tentang SPGDT

Peraturan Pemerintah Republik Indonesia Nomor 32 tahun 2004 Tentang Pedoman Satuan Polisi Pamong Praja. Retrieved March 2, 2017 from: https://portal.mahkamahkonstitusi.go.id/eLaw/mg58ufsc89hrsg/pp32_2004.pdf

Pusat Data Informasi dan Humas – BNPB, Retrieved March 2, from : http://dibi.bnpb.go.id/data-bencana diunduh pada 2 Maret 2017

Pusat Penanganan Krisis Kesehatan, (2010). *Pedoman Gladi Kesiagaan Bencana.* Jakarta: PPK Kesehatan Kemenkes RI.

Schipper, L., & Pelling, M. (2006). Disaster risk, climate change and international development: scope for, and challenges to, integration. Disasters. 30:19–38. Doi: 10.1111/j.1467-9523.2006.00304.x

Sonmez, P. (2017). Association of Cognitive, Affective, Psychomotor and Intuitive Domains in Education, Sönmez Model. Universal Journal of Educational Research 5(3): 347-356. Doi : 10.13189/ujer.2017.050307

Sauer, L.M., McCarthy, M.L., Knebel, A. & Brewster, P. (2009). Major influences on hospital emergency management and disaster preparedness. Disaster Med Public Health Prep. 3:S68. Doi: 10.1097/DMP.0b013e31819ef060

Undang-Undang Republik Indonesia Nomor 24 Tahun 2007 tentang Penanggulangan Bencana.

Undang-undang Republik Indonesia Nomor 32 tahun 2004 Tentang Pemerintahan daerah.

Wang, J., Ma, L., & Lu, Y.Q. (2015). Strategy analysis of cardiopulmonary resuscitation training in the community. Journal of Thoracic Disease. 7(7): E160–E165. Doi: 10.3978/j.issn.2072-1439.2015.06.09.