

The Distinction of Inhibiting Factors among Patients who Actively and Inactively Participate in Phase II Cardiac Rehabilitation

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Abstract

Cardiac rehabilitation (CR) is an important post-acute management for Cardiovascular Heart Disease (CHD) patients. CR has benefits, such as preventing recurrence and improving patients physically. However, the CR participation rate is low. This condition can produce negative effects, such as recurrence and depression. There are inhibiting factors contribute to the CR participation. The purpose of this study is to identify the distinction of inhibiting factors in patients who actively and inactively participate in phase II CR in Bandung. The result will be as advices to improve policy and nursing intervention to improve the participation number of phase II CR in Bandung. This study used comparative design with cross-sectional approach on 72 respondents who recruited by using purposive sampling at a hospital in Bandung, Indonesia. Data were collected by using Cardiac Rehabilitation Barrier Scale (validity $r = 0.46-0.55$ and reliability 0.887). Data were analyzed by using descriptive frequency and comparative analysis by using Mann-Whitney. It was showed that there were two significant differences between both of the group in terms of health services aspect ($p\text{-value} = 0.002$) and time ($p\text{-value} = 0.001$). However there were no significant differences between both of the group in logistics aspect ($p\text{-value} = 0.134$), and functional status aspect ($p\text{-value} = 0.057$). It indicates that there were distinctions in inhibiting factors on health services and time aspects. There were differences in the health services, which was related to the lack of CR information and also time aspects, which was related to the lack of CR facilities in remote areas. Therefore, providing information about CR and community or home-based CR are needed.

Keywords: Cardiac rehabilitation, CHD, inhibiting factors, participation.

Introduction

Cardiovascular disease, especially coronary heart disease (CHD) is one of the main causes of death in developed and developing countries, including Indonesia (Ministry of Health RI, 2013). By 2015, WHO records about 17 million people worldwide died from cardiovascular disease. And so did in Southeast Asia, coronary heart disease becomes the number one killer (World Health Organization, 2015). The number of CHD patient continues to lift up every year as the increase of instant lifestyle which is bad for the body. In Indonesia, there are about 880 thousand CHD occurrences in 2013 (WHO, 2013). Among many provinces in Indonesia, West Java Province is one with the largest number of coronary heart disease patients, as many as 160 thousand people (Ministry of Health RI, 2013).

According to Indonesian Heart Association (2015), the management of coronary heart disease (CHD) is based on the phase of the disease. In acute phase, when heart attack occurred, pharmacological action (nitroglycerin) and coronary revascularization are usually performed. Then, in post-acute phase, the body's condition, especially heart should be maintained through pharmacology and cardiac rehabilitation.

Cardiac rehabilitation is an important aspect of post-acute patient management. Cardiac rehabilitation consists of physical activities such as treadmill, bicycle ergometer, stretching, and breathing exercise. In addition, there are also dietary control, smoking cessation, and stress management (Olive, 2012; Piotrowicz & Wolszakiewicz, 2008). To follow cardiac rehabilitation, the patient must meet the indications, which are patients who have a history of unstable angina or chronic ischemic heart disease, and patients who have been taking action of heart reperfusion (fibrinolysis, Percutaneous Coronary Intervention (PCI), or Coronary Artery Bypass Graft (CABG)). Rehabilitation is divided into 4 phases, which are must be done sequentially and continuously. Phase I begins as soon as the patient recovers from CHD and phase II begins when patients have been allowed to do outpatient treatment. To

be eligible for doing cardiac rehabilitation phase III and IV independently, patients need to be passed from phase II which is carried out in health facilities, supervised and monitored by health personnel (Scottish Intercollegiate Guidelines Network (SIGN), 2002). Phase II is a transitional phase from hospitalized patient to the outpatient, which has many important benefits. This is the phase that we would discuss about later in this research.

Cardiac rehabilitation has many benefits, such as optimizing the body's physical capacity, providing counseling to patients and families in preventing complications and helping patients to return to their physical activity before the disease. Taylor (2004) stated that cardiac rehabilitation effectively reduces mortality rate, total cholesterol and triglycerides, and decreases systolic pressure on blood pressure. It is also stated that cardiac rehabilitation improves patients' functional status and quality of life (Pasquali, Alexander, Coombs, Lytle, & Peterson, 2003). Phase II of cardiac rehabilitation is a transitional phase undertaken by outpatients. This phase has some functions, such as controlling the risk, controlling the functional status of patients and being the stage where education and counseling to change lifestyle can be carried out (Radi, Joesoef, & Kusmana, 2009).

However, the rate of cardiac rehabilitation participation both at worldwide and in Indonesia is still low. There are not many patients actively participate and complete the cardiac rehabilitation program in phase II. Meanwhile, study noted that patients' who inactively participated in cardiac rehabilitation produce a higher probability of depression by about 20% (Casey, Hughes, Waechter, Josephson, & Rosneck, 2008). This will certainly affect the quality of life of CHD patients, so that patients tend to be easy to experience deterioration (Nuraeni, Mirwanti, Anna, Prawesti, & Emaliyawati, 2016). Furthermore, other effects of do not performing or do not completing cardiac rehabilitation are abnormality of heart rate which can be followed by higher risk of recurrence (Chou Lee & Su, 2014) and lower quality of life, especially in post-PCI and CABG patients (Hutagalung, Susilaningsih, & Mardhiyah, 2013; Rosidawati, Ibrahim, &

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Nuraeni, 2016).

Previous studies stated that, there were 4 main contributing factors for active participation in cardiac rehabilitation including health services, logistics, time, and functional status (Grace, 2011). Health services factor include patients' knowledge and perceptions about cardiac rehabilitation, physician recommendations, and healthcare providers of cardiac rehabilitation programs. Logistic factor includes distance, cost, transportation, weather, and family support. Time factor includes bustle, limited time, and work. Functional status factor includes age, gender, patients' fitness perception, and co-morbid disease.

The previous studies identified the description and factors related to cardiac rehabilitation. However, there has been no study comparing the participation of groups who were actively and inactively taking part in cardiac rehabilitation. Harlan (1995) stated that the comparison of inhibiting factor in active group and inactive group showed that gender, occupation, and education have bigger value in the inactive group. The data indicate that those typical characteristics more vulnerable to be inactive person in participating CR program. The comparison of inhibiting factor in active group and inactive group could show how much the factor inhibit patients to participate in cardiac rehabilitation. This is important for nurse for determining the solution to enhance the patients' participation in phase II cardiac rehabilitation.

The purpose of this study was to identify the distinctions of inhibiting factors in active and inactive group patients which are undergoing cardiac rehabilitation. Expectedly, this study can show the distinctions of inhibiting factors in both groups so that it can provide guidance, suggestion, and advise to overcome the problem of low participation rate of cardiac rehabilitation in Indonesia, especially in West Java.

Method

This study used comparative-descriptive design. It involved 72 cardiac patients who

were participating in cardiac rehabilitation phase II and recruited by using purposive sampling. The respondents' calculation was undertaken by using the comparison formula and the selected respondents were divided into 2 groups, those who took part actively in rehabilitation (active group) and those who took part inactively in cardiac rehabilitation (inactive group). Each group has research inclusion criteria, as follows:

a. Criteria for active group:

i. Participating in phase II cardiac rehabilitation at least 6 meetings regularly

b. Criteria for inactive group:

i. Participating in phase II cardiac rehabilitation less than 6 meetings

ii. Participating in phase II cardiac rehabilitation minimal 6 meetings irregularly

iii. Not participating in phase II cardiac rehabilitation when he/she has been declared eligible for cardiac rehabilitation Phase II by cardiologist.

The data were collected by using Cardiac Rehabilitation Barrier Scale questionnaire developed by Sherry L. Grace in 2011 that has been proofed by back translation and done the validity and reliability test. Validity values in the range of 0.46–0.55 and reliability value 0.887.

Data collection was carried out in 2 places, which were in cardiac rehabilitation facility and Outpatient Care on a hospital in Bandung. Data were collected during February - April 2017. The research had the ethical clearance from the (sebutkan institusinya) number 177/UN6.C10/PN/2017.

Data analysis was performed by using descriptive and inferential analysis. The univariate analysis used distribution frequency to analyze respondents' characteristics (age, gender, ethnicity, religion, habitation, occupation, education, marital status, income, possession of co-morbid disease, medical history, frequency of recurrence, cardiac rehabilitation participation status, perception of fitness, and perception of recurrence) and mean to analyze each of inhibiting factor. The bivariate analysis was performed by using Mann-Whitney test to identify the difference of inhibiting factors in both groups. This was because of the abnormal data distribution on respondents.

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Result

The Characteristics of Respondents

Most of the respondents was elderly (56–65 years old) and male, Moeslem, Sundanese ethnic, live with their spouse, in Bandung. More than half of respondents were working, had a moderate and high level of education, and more than 40% of respondents had monthly family income less than 2.8 million rupiah.

Table 2 was related to the characteristics of respondents based on the history of disease and their participation in the cardiac rehabilitation program. The majority of respondents (68.1%) have been diagnosed for more than 6 months, more than half of respondents (54%) did not have comorbid disease, and most of the participating respondents (95.9) had undergone medication and reperfusion therapy (fibrinolysis and Percutaneous Coronary Intervention (PCI) or

Table 1 Frequency Distribution of the Respondents Characteristics

No	Characteristics	Frequency (f)	Percentage(%)
1.	Age		
	Late adulthood (36-45 tahun)	5	6.9
	Early elderly (46-55 tahun)	21	29.2
	Elderly (56-65 tahun)	37	51.4
	Late elderly (> 65 tahun)	9	12.5
2.	Gender		
	Male	55	76.4
	Female	17	23.6
3.	Religion		
	Moeslem	68	94.4
	Non-Moeslem	4	5.6
4.	Ethnicity		
	Sundanese	55	76.4
	Non-Sundanese	17	23.6
5.	Domicile		
	Bandung dan Bandung Districts	50	69.4
	Outside of Bandung and Bandung Districts	22	30.6
6.	Marital Status		
	Married	65	90.3
	Not Married	0	0
	Widow/Widower	7	9.7
7.	Level of Education		
	Low	18	18.25
	Moderate	27	37.5
	High	27	37.5
8.	Occupation		
	Unemployed	34	47.3
	Employed	38	52.8
9.	Monthly Family Income		
	< Rp 2,8 million	29	40.3

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Rp 2,8 million – Rp 5 million	25	34.7
>Rp 5 million	18	25

Table 2 Respondents Clinical Characteristics

No	Clinical Characteristics	Frequency (f)	Percentage (%)
1.	Length of Diagnosed		
	0–6 month	23	31.9
	>6 month	49	68.1
2.	Comorbid Disease		
	No	39	54.2
	Yes	33	45.8
3.	History of Medication		
	Medication	3	4.2
	Medication & reperfusion therapy (PCI dan fibrinolysis)	54	75
	Medication& CABG	15	20.9
4.	Frequency of recurrence		
	Never	24	33.3
	< 1 time per week	16	22.2
	1–2 times per week	10	13.9
	≥ 3 times per week	8	11.1
	1–3 times per day	11	15.3
	≥ 4 times per day	3	4.2
5.	Participation in Cardiac Rehabilitation		
	Regularly	38	52.8
	Irregularly	34	47.2
	Never	0	0
6.	Number of Attendance/Participation to Cardiac Rehabilitation Facility		
	≥ 6 times	36	50
	< 6 times	36	50
7.	Perception of Fitness		
	Improve	42	58.3
	No Changes	6	8.3
	Decline	24	33.3
8.	Perception of Angina Recurrence		
	Not Worry	20	27.8
	Rarely Worry	17	23.6
	Worry	18	25
	Frequently worry	14	19.4
	Cannot stop being worry (Always worry)	3	4.2

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ring installation).

Based on the cardiac rehabilitation participation, more than half of of respondents (52.8%) participated cardiac rehabilitation phase II regularly. For the number of attendance, the number of both group were 36 people. More than a third of respondents (33.3%) stated they had never experienced angina relapse. As many as 58.3% respondents stated that their fitness had improved caused by CR. And more than a quarter of respondents (27.8%) expressed no concern about angina relapse.

Overview of Cardiac Rehabilitation Participation

Description of the participation of CHD patients in cardiac rehabilitation was analyzed by distribution frequency. The patient’s participation status in cardiac rehabilitation program is based on inclusion criteria.

Based on table 3.3, it can be seen that there were 36 patients, either in the active or in the inactive group.

The Distinction of Inhibiting Factors in Active and Inactive Groups

The differences referred to the Mann-Whitney test, due to an abnormal distribution of data. The higher mean showed the higher barrier perceived by the group. The P value below 0.05 showed the differences that significantly perceived by the group.

The following table shows the results of the Mann-Whitney test of each question item that representing all four aspects. The higher mean showed the higher barrier perceived by the group. The P value below 0.05 showed the differences that significantly perceived by the group.

Table 3 The Frequency of Attendance in Cardiac Rehabilitation

		Participation to Cardiac Rehabilitation		Participation Status
		Regularly	Irregularly	
Number of Attendance/	≥ 6 meetings	36	0	Active (50%)
Participation	< 6 meetings	2	34	Inactive (50%)

Table 4 The Distinction of Inhibiting Factors in Active and Inactive Patients based on Mann-Whitney Test (n=72)

Sub Variabel	Active Patients Group	Mean Inactive Patients Group	P value
Healthcare Services Aspects	2.19±0.51	2.56±0.49	0.002
Logistics Aspects	2.31±0.70	2.59±0.72	0.134
Time Aspects	2.14±0.67	2.76±0.85	0.001
Functional Status Aspects	2.15±0.61	2.38±0.58	0.057

Table 5 The Distinction of Each Item Statement in Both Groups from Mann-Whitney Test Results (n=72)

No	Statement	Mean Active Patient Group	Mean Inactive Patient Group	P value
1.	Healthcare Services Aspects			
-	I didn’t know about cardiac rehab (e.g., doctor didn’t tell me about it)	2.28	2.86	0.019
-	I don’t need cardiac rehab (e.g., feel well, heart problem treated, not serious)	2.06	2.28	0.152
-	I already exercise at home, or in my community	2.33	2.86	0.023
-	My doctor did not feel it was necessary	1.97	2.44	0.001
-	Many people with heart problem don’t go, and they are fine	2.24	2.53	0.031

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-	I can manage my heart problem on my own	2.36	2.61	0.202
-	I think I was referred, but the rehab program didn't contact me	2.14	2.50	0.056
-	It took too long to get referred and into the program	2.11	2.56	0.014
-	I prefer to take care of my health alone, not in a group	2.36	2.42	0.645
2.	Logistics Aspects			
-	Distance	2.53	2.81	0.239
-	Cost	2.19	2.42	0.219
-	Transportation problems	2.47	2.61	0.472
-	Family responsibilities (e.g., caregiving)	1.97	2.44	0.055
-	Severe weather	2.39	2.67	0.297
3.	Time Aspects			
-	Travel (e.g., holidays, business, cottage)	2.14	2.81	0.002
-	Time constraints (e.g., too busy, inconvenient class time)	2.19	2.78	0.014
-	Work responsibilities	2.08	2.69	0.005
4.	Functional Status Aspects			
-	I find exercise tiring or painful	2.06	2.33	0.072
-	I don't have the energy or physical limitations	2.25	2.53	0.172
-	Other health problems prevent me from going	2.11	2.33	0.115
-	I am too old	2.17	2.31	0.572

Discussion

The Distinctions of Inhibiting Factors in Active and Inactive Groups

Hypothesis of this study is there were no differences or distinctions of inhibiting factor between active group and inactive group who were undergoing phase II cardiac rehabilitation. Referring to the p value in table 3.4, (p value <0.05), there were differences in inhibiting factors in active and inactive patients who were undergoing phase II cardiac rehabilitation. Based on the study findings the distinctions of inhibiting factors between active and inactive patients were in health services and time aspect. In the health services aspect, the most significant differences were in the statement of not knowing about cardiac rehabilitation (p value = 0.019) and the physicians do not

recommend for cardiac rehabilitation (p value = 0.001).

In the statement of not knowing cardiac rehabilitation, the mean value in the active group was 2.28, while in the inactive group was 2.86. The difference of mean value was 0.59. This happened because in active group only 16.7% of respondents agreed that lack of knowledge about cardiac rehabilitation became inhibitor, while in inactive group there were 36.1% of respondents who agreed that lack of knowledge about cardiac rehabilitation became inhibitor. This implied that the information about cardiac rehabilitation to the patients influenced their active participation on the program.

In a statement of the absence of a physician's referral to a cardiac rehabilitation facility, the mean for the active group was 1.97, whereas in the inactive group the mean

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value was 2.44. The difference of mean value was 0.47. This occurred because as many as 2.8% of respondents in the active group agreed that absence of a referral from the physician to be an inhibitor, while in the inactive group 11.1% agreed that the absence of a referral from the physician made them did not attend the cardiac rehabilitation program. It concluded that reference plays a role in determining the participation of cardiac patients in rehabilitation programs.

The lack of respondents' knowledge about cardiac rehabilitation is influenced by the health providers, such as physicians and nurses (Clark et al., 2012). Respondents in the inactive group said they were not introduced and referred to cardiac rehabilitation facilities even though they had appropriate indications for starting physical activity again. This was in line and supported the results of the study, in which the respondents in the inactive group did not have adequate knowledge and also did not get a referral to participate cardiac rehabilitation, despite meeting the indications of cardiac rehabilitation.

This was in accordance with Clark's research (2012) which stated that one of the roles of medical personnel is to provide knowledge about cardiac rehabilitation. Health workers, whether physicians or nurses, should be able to provide knowledge about cardiac rehabilitation. It because the cardiac rehabilitation team consists of cardiologists, nurses, physiotherapists, and nutritionists (Olive, 2012). Providing health education on cardiac rehabilitation will improve knowledge about cardiac rehabilitation. Increasing the patient's knowledge of cardiac rehabilitation, especially regarding these benefits will improve patient compliance in cardiac rehabilitation. There are several way to increase patients participation by maximizing health workers role especially nurses' role as educator and care giver. First, providing the information about cardiac rehabilitation directly during discharge planning (when the patient is finished undergoing hospitalization and will start outpatient treatment) becomes very important. Information can be spoken directly or through a leaflet that contains all information about cardiac rehabilitation (Hutchinson et al., 2015). The information provided should be given clearly, with

consideration of respondent's characteristics that majority of respondents (55.75%) had the low educational background.

Second, the other solutions to improve participation and adherence to cardiac rehabilitation programs are to allow patients who are not recommendations from a doctor but have a history that includes an indication of cardiac rehabilitation to be examined and follow cardiac rehabilitation. The role of the nurse will be very important, because the patients' assessment must be done very carefully. Automatic referrals for all CHD patients who meet the criteria for cardiac rehabilitation may also be a solution to increasing participation and adherence to cardiac rehabilitation (Clark et al., 2012).

In the time aspect, the differences were in the three statement items representing the time aspect, there were other activities/schedules (p value = 0.002), limited time (p value = 0.014), and work (p value = 0.005). A significant difference in time aspect occurred because many patients complain of a cardiac rehabilitation schedule which was not in 2 consecutive days, e.g.: Monday and Tuesday but what has happened the schedule was on Monday and Wednesday. This made the patient felt reluctant because there were other activities/schedules, had limited time, or work. There was a difference in mean value as much as 0.67 on the statement "there are other activities/schedules". This was because as much as 30.6% of patients in the inactive group agreed that other activities/schedules became inhibitor, while in the active group only 16.7% agreed that other activities/schedules were inhibitors. Then, for "work" statement, the mean value difference was 0.61. This was because as much as 50% of respondents from both groups were still actively working, so doing therapy with 1 or 2 days interval will difficult to them to take work permission. But in the active group, many of respondents rescheduled to the same week so they continued to attend regular cardiac rehabilitation meetings per week, while inactive groups did not. This information can be seen from the CR daily meeting list. This condition distinguished the participation of both groups in terms of time. It showed that motivation to participate in CR between active and inactive group was different, and it

should be proven by other study. Furthermore related to these conditions, it is necessary to consider other cardiac rehabilitation centers in the regions so that patients can save time to come even though they must be done CR program several times a week.

Then, for "limited time" statement, the mean difference of the two groups was 0.59. This was because as much as 30.6% of respondents in the active group agreed the limited time was inhibiting, while in the active group only 22.2%. This was also in accordance with Bruhal et al. (2007) who stated that the average patient's driving time for a 25 km distance to a cardiac rehabilitation center in Ontario, Canada was about 60–80 minutes. The average distance of respondents who live in the city and district of Bandung to cardiac rehabilitation center is about 25 km. If the distance is converted to time, the respondents who live in the city and district of Bandung could spend \pm 1 hour trip.

Based on the interview to the respondents, It was known that respondents who live outside the city/district of Bandung, in active groups, they chose to rent a rent house/boarding house close to the cardiac rehabilitation facility or lived in their relative's houses in Bandung so they can save the time. However, in the inactive group, the respondents who live outside the city/district of Bandung, they had to travel more than 25 km, when converted to time, they could spend \pm 3 hours trip. This travel time is also influenced by the geographical characteristics of Bandung which is a big city, traffic jams happened so often, the lack of public transport facilities from the respondents' location, and also the under-construction roads condition. It can prolong the travel time to cardiac rehabilitation. It also distinguished the participation of cardiac rehabilitation in both groups.

This condition reinforces the importance of CR facilities made in the regions, or in the community centers or home based settings. This condition reinforces the importance of CR facilities made in the regions, or in the community centers or home based settings to overcome the obstacle from time aspect. The Community and home based cardiac rehabilitation can be possible implemented, by training and empowerment of health workers

and nurses on the concept and measurement of cardiac rehabilitation to health workers and nurses (Daskapan, 2005; Mandic et al., 2013; Mosleh, Bond, Lee, Kiger, & Campbell, 2014). Cardiac rehabilitation at home and community has also increased the percentage of attendance at each session as many as 98% for those who do at home and 81% for those who do in the hospital (Daskapan, 2005). Oerkild (2012) mentioned that patients who perform cardiac rehabilitation at home will experience an increase in physical capacity seen from the results of the walking test for 6 minutes as many as 33.5 meter.

However, the benefits of cardiac rehabilitation will only increase participation continuously because of the benefits of cardiac rehabilitation are increase the external motivation (Jane & Doust, 2015). To improve the internal motivation, knowledge of cardiac rehabilitation is required (Lima et al., 2015). Meanwhile in the results of this study, knowledge of cardiac rehabilitation had different results in both groups, which is the inactive group had less knowledge than the active group. So, to increase the number of participation in the inactive group, the health workers which is cardiac rehabilitation team, especially nurses have to provide the knowledge about cardiac rehabilitation from the very beginning when the patients have been diagnosed with CHD or when the patients have been hospitalized caused by CHD.

Research Limitation

Limitation of this study was the method of determining the criteria of active and inactive patients. Due to the existing concepts of cardiac rehabilitation, the active patients should be those who had followed cardiac rehabilitation during 12 regular meetings. However, in fact, there was no patient had followed 12 meetings. Most patients who came were those who had followed 6 or more meetings. Another limitation was the generalizability because this study only held at one cardiac rehabilitation center in West Java.

Conclusion

The results showed that there were distinctions in inhibiting factors in the active and inactive groups undergoing phase II cardiac rehabilitation in Bandung. The differences were in health services and time aspects, whereas in other aspects there were no differences found. The item statements that had significant differences were: from the health services aspect were a statement of “not knowing about cardiac rehabilitation and the physicians recommendations”, while from the time aspect were “there are other activities/schedules, limited time, and work”.

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Type 2 Diabetes Mellitus Risk Level, Cardiovascular Diseases Risk Level, and Quality of Work Life among University Staffs; Correlational Study

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Abstract

Type 2 diabetes mellitus and cardiovascular diseases are two of the most serious health problems produce wide negative impacts in Indonesia. Both diseases shares similar risks factors and may affect individual's health status and quality of work (QoWL). Unfortunately, there is no evidence reported the chronic diseases risk level and their correlation with QoWL among university staffs in Indonesia. This correlational study aimed to identify the risk level of Type 2 diabetes mellitus (T2DM) and cardiovascular diseases and it correlation with the QoWL among university staffs. As many as 125 university staffs from one of public university in West Java – Indonesia were recruited randomly and asked to complete Finnish Diabetes Risk-Assessment form, The Jakarta Cardiovascular Scale, and quality of work life (QoWL) Evaluation Scale. The collected data were analyzed using descriptive and Pearson Correlation test. Results showed that nearly half of respondents had chronic diseases risk elevation; T2DM (40.39) and cardiovascular diseases (49%). Additionally, more than half of them (52.40%) perceived that their QoWL was less satisfied. It was found there was a significant relationship between T2DM risk level and cardiovascular diseases risk ($r = 0.513$; $p=0.00$); however, there was no significant correlation, neither between T2DM risk level ($p=0.54$) nore cardiovascular disease risk level ($p = 0.19$) with QoWL. To summarize, the university staffs are vulnerable for developing chronic diseases and have less satisfied QoWL. Therefore, it is important for the university to develop policy or program that enhances the employees' opportunity in managing the risk and improving their health status and QoWL.

Keywords: Cardiovascler-diseases, diabetes-mellitus, QoWL, risk- level.

Introduction

Non-communicable diseases (NCDs) currently emerge as one of serious health problem worldwide, including Indonesia. This typical disease reported as the leading global cause of death and is responsible for 70% death worldwide, and the number is continuously growing (World Health Organization [WHO], 2017). Nationally, the number of patients with chronic disease reported as the top ten highest death-caused-diseases in Indonesia (Ministry of Health Republic of Indonesia [MOHRI], 2013). Other survey reported 73% death in Indonesia related to NCDs (WHO, 2017). Cardiovascular diseases and diabetes mellitus in particular were noted closely related to premature death and disabilities (WHO, 2014).

These burdens may be minimized, particularly by performing healthy lifestyle including regular physical activity, healthy diet, and smoking cessation. Those recommended lifestyle are identified effectively minimizing the risk of both chronic diseases (Tuomelehto, Schwarz, & Lindstrom, 2011; Vartiainen, Jousilahti, Alftan, Sundvall, Pietinen, & Puska, 2000; Zatonski & Willett, 2005). Unfortunately, a survey found that some risk factors of chronic diseases exist among Indonesian population. It was reported that 35% of total population were actively smoking, 27.8% raised blood pressure, and 4.8% obesity (WHO, 2014).

Those trends also identified among university staffs. One study in Barbados found that university staff who older than 45 years old identified have atleast one of chronic diseases risk factors (smoking, lack of physical activity, obesity, lack of vegetables and fruits consumption, and raised blood pressure) and more than half of them have all three risk factors (Morris, Unwin, Ali, Brathwaite-Graham, Samuels, 2011). Almost similar findings identified in one study conducted among staffs of one university in Saudi Arabia (Alzeidan R, Rabiee F, Mandil A, Hersi A, & Fayed A, 2016). In Indonesian context, a study identified that family history and gender as significant hypertension-associated risk factors among staffs in one public university in West Java (Azra,

2016). Moreover, prevention program still challenging.

It was generally being understood that work types and working environment are the important health determinants. International Labor Organization [ILO] (2008) reported that 2.3 milion deaths worldwide were associated with work, 321.000 deaths were occupational-accident related death and the rest were related to the work-related diseases. Additionally, it noted that employees who reported lack of physical activities, actively smoking and obesity were associated with an increase of health care charges (Kuriyama, Hizawa, Ohmori, Suzuki, Nishino, Fujita, et. al., 2004). Moreover, these typical employees created higher disease burden and absenteeism compared with those who did not have risk factors (Asay, Roy, Lang, Payne, & Howard. 2016; Kolbe-Alexander, Buckmaster, Nossel, Dreyer, Bull, Noakes, et al., 2008). In the other words, having chronic diseases risks will potentially lessen employees' productivity and quality of work. The impact may greater when the staffs already developed the chronic diseases. Absenteeism, low productivity, physical and psychological problem as well as severe fatigue that potent to develop work disability were commonly experienced by staffs who suffer from chronic diseases (Fouad, Waheed, Gamal, Amer, Abdellah, & Shebl, 2017; Varekamp & van-Dijk, 2010; Vuong, Wei, & Beverly, 2016).

Staffs productivity and quality of work life (QoWL) are two variables that positively associated (Hatam, Zarifi, Lotfi, Kavosi, & Tavakoli, 2014). QoWL also positively related to work performance and career advancement among academic staffs (Acheampong, Muhammed, & Agyapong, 2016; Parsa, Khairudin Bin Idris, Bahaman Bin Abu Samah, Nor Wahiza Binti Abdul Wahat, Parsa, 2014). However, there were no published article suggested the correlation between having risk for chronic diseases status and QoWL. Therefore, it is important to identify both variables and its correlation to early detect the potential burdens as well as enlarge the opportunity for preventing the diseases as part of health status and QoWL improvement.

Methods

This study applied descriptive correlational design and conducted in one public university in West Java – Indonesia. Data collection was conducted in three faculties. After the researcher team gained the permission letter from each faculty, the faculty will announce to the staffs that our team will conduct research where free general physical health assessment (blood glucose test, measuring blood pressure, and body mass index) as one of the benefits for staff who participated in this study. There were 125 staffs (34.25% of total population 365 staffs) that voluntarily attend the invitation, provided informed consent, and fill the data requested.

Type 2 Diabetes Mellitus (T2DM) risk level was measured using Finnish Diabetes Risk Assessment Form developed by Lindström and Tuomilehto (2003). It was specifically developed to measure the risk level of T2DM based on the result of accumulated score of diabetes risk factors including age, body mass index (BMI), waist circumference, physical activity, daily vegetable and fruit consumption, history of hypertension medication, hyperglycemia history, and diabetes family history. The results were categorized into low risk - 1 in 100 persons will develop diseases (total score < 7), slightly elevated - 1 in 25 persons will develop diseases (total score 7–11); moderate risk - 1 in 6 persons will develop diseases (total score 12–14), high risk - 1 in 3 persons will develop diseases (total score 15–20) and very high risk - 1 in 2 persons will develop diseases (total score >20) (Lindström & Tuomilehto, 2003).

The Skor Kardiovaskular Jakarta (SKJ), developed by Kusuma (2014), was applied for measuring the cardiovascular diseases risk level. This measurement was modified from Framingham Risk Score (FRS) that commonly used to identify cardiovascular diseases (CVD) risk level over 10 years based on the accumulated score of cardiovascular risk factors including hypertension history, age, blood high-density lipoprotein (HDL) level, smoking history, blood total cholesterol level, and diabetes history. Different with FRS, SKJ did not use blood HDL and blood total cholesterol level for counting the risk

level and replaced it by physical activity and body mass index (BMI) (Kusuma, 2014; MOHRI, 2017). Both measurements were reported as valid, reliable, and applicable to measure both variable (Janghorbani, Adineh, & Amini, 2013; Lindström J & Tuomilehto J., 2003; Kusuma, 2014).

Since some data (such as hyperglycemia history, waist circumference, blood pressure, and body mass index) considered as uncommonly known by respondents, those were assessed by performing direct physical examination. Hyperglycemia in this study was measured based on the finger prick blood glucose test. The result of total score was categorized into low risk – risk for CVD < 10% (total score -7 to 1), moderate risk – risk for CVD 10 – 20% (total score 2 – 4) and high risk – risk for CVD > 20% (total score > 5) (Kusuma, 2014).

Data related Quality of Work Life (QoWL) were collected using QoWL Evaluation scale developed by Timosi, Pedroso, de-Francisco, and Pillati (2008). It consisted of 9 domains (work environment, organization culture and climate, relation and co-operation, training and development, compensation and rewards, facilities, job satisfaction and security, work autonomy, and adequacy of resources) as well as 50 items with five answer options; very satisfied (5) to very unsatisfied (1). This claimed as valid and reliable with Chronbach alpha score higher than 0.6 (Swamy, Nanjundeswaraswamy, & Rashmi, 2015). Higher total score indicated the higher QoWL.

Descriptive analysis was conducted to describe each variable including respondent characteristics, and further analysis was conducted for identifying the correlation between the identified variables by operating Pearson correlation test.

Results

Respondents' Characteristics

Generally, most of respondents (86.36%) are married, more than half of them (55.20%) are male, and almost of half of them (49.6%) are in the vulnerable age for developing chronic diseases. The detailed data related the respondents characteristics are listed in the

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table bellow:

Table 1 Respondents Characteristics (n = 125)

Characteristics		f	%
Gender	Male	69	55.20
	Female	56	44.80
Age (years) Mean +SD = (43.26 + 10.27)	> 45 years older	62	49.6
	< 45 years old	63	50.4
Marital Status	Married	114	91.20
	Not Married Yet	8	6.40
	Widow/Widower	2	1.60
	Not Fill The Data	1	0.80
Educational Level	Elementary school	3	2.4
	Junior high school	4	3.2
	Senior high school	22	17.60
	Diploma and bachelor	40	32.00
	Master	29	23.20
	Doctor	22	17.60
	Not Fill The Information	5	4.00

Table 2 Health Characteristics and Prevention Behaviors (n = 125)

Health Characteristics and Behaviors		f	%
Blood Cholesterol level	Normal (< 200 mg/dl)	56	44.80
	Hypercholesterolemia	69	55.20
Blood glucose level	Normal	115	92.00
	Hyperglycemia	10	8.00
Waist circumference	Normal	78	63.40
	Higher than normal	47	37.60
BMI (Body mass index)	Normal	52	41.60
	Overweight	45	36.00
	Obesity	28	22.40
Blood cholesterol check experience	Ever	67	53.60
	Never	58	46.40
Blood glucose check experience	Ever	42	33.06
	Never	83	66.94
Smooking	Yes	26	19.26
	No	99	80.74
Daily vegetables and Fruits consumption	Yes	96	72.72
	No	29	27.28
Routine physical activities	Yes	71	53.79
	No	54	46.21

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Table 3 Type 2 Diabetes Mellitus (T2DM) and Cardiovascular (CVD) Risk Level (n = 125)

Chronic Diseases Risk Level		f	%
T2DM Risk Level	1. Low risk (score 0-7 = 1 in 100 persons will develop diseases)	80	60.61
	2. Slightly elevated risk (score 7 – 11 = 1 in 25 persons will develop diseases)	41	31.06
	3. Moderate risk (score 12 – 14 = 1 in 6 persons will develop diseases)	10	7.58
	4. High risk (score 15 – 20 = 1 in 3 persons will develop diseases)	1	0.75
	5. Very high risk (score > 20 = 1 in 2 persons will develop diseases)	0	0.00
CVD Risk Level	Low risk (score -7 to 1) ~ risk for developing CVD < 10%	67	50.75
	Moderate risk (score; 2 – 4) ~ risk for CVD 10 – 20%	38	28.79
	High risk (score > 5) ~ risk for CVD > 20%	27	20.46

Table 4 University Staffs' Quality of Work Life

Variable & Domain	Mean	Frequency (%)	
		Unsatisfied (Low QoWL)	Satisfied/ (High QoWL)
QoWL (score range 50 – 250)	127.29	66 (52.40)	60 (47.60%)
Work environment Domain (6 items)	2.62		
Organization culture Domain (7 items)	2.61		
Relationship Domain (6 items)	2.58		
Training and development Domain (4 items)	2.33		
Compensation and rewards Domain (5 items)	2.54		
Facilities Domain (5 items)	2.53		
Job satisfaction and security Domain (8 items)	2.50		
Work autonomy Domain (6 items)	2.59		
Adequacy of resources Domain (3 items)	2.57		

Table 5 Correlation between Type 2 Diabetes Mellitus (T2DM) Risk Level, Cardiovascular Diseases (CVD) Risk Level and Quality of Work Life (QoWL)

	T2DM	CVD risk score	QoWL score
T2DM risk score	-	r = 0.513 p = 0.000	r = - 0.06 p = 0.54
CVD risk score	-	-	r = - 0.12 p = 0.19
QoWL score	-	-	-

Additionally, it was identified that more than half of respondents reported that ever check their blood cholesterol level (53.6%), performed routine physical activities (53.79%), daily consumed vegetables and fruits (72.27%), and did not actively smoking (80.74%). However, more than half of respondents (55.2%) had hypercholesterolemia, more than one-third overweight (36%), waist circumference higher than normal (central obesity) (37.6%), and never check blood glucose level before participated in this study (66.94%). The complete data were listed in the table below.

Morover, it was found that more than one-third of staffs identified being vulnerable for developing a typical chronic diseases, either Type 2 Diabetes Mellitus (score > 7) or cardiovascular diseases (score > 2). The complete risk level categories are listed in the table below.

In terms of QoWL, the given table described that more than half of respondents reported less satisfied/low QoWL (52.40%). It is indicated that staffs required some improvements, particularly in the training and development domain that found with lowest score.

The table signified there was significant positive relationship between T2DM and CVD risk level, means that higher risk for T2DM will produce higher risk for CVD and oppositely. Additionally, both diseases risk levels were not significant relationship with QoWL.

Discussion

This study found that almost half of respondents had elevated risk for developing chronic diseases, either T2DM or CVD.

These findings strengthen trends found in previous studies that risk for T2DM and CVD also exist among university staffs. Hypercholesterolemia (55.20%) and abnormal body mass index (58.40%) identified as identified risk factors with the highest percentage. Additionally, more than one-third of respondents had waist circumference higher than normal (37.6%). These should be carefully considered since some studies noted that hypercholesterolemia, general and central obesity closely related to hypertension, atherosclerosis, metabolic syndrome, diabetes and cardiovascular diseases (Barroso, Marins, Alves, Gonçalves, Barroso, & Rocha, 2017; Hirani, Zaninotto, & Primatesta, 2007; Kearns, Dee, Fitzgerald, Doherty, & Perry, 2014; Kusuma, 2002; Memish, El-Bcheraoui, Tuffaha, Robinson, Daoud, Jaber, et al., 2014). Hypercholesterolemia risk here is worsened by the respondents who reported never examined their blood cholesterol level that increase undetectable problem.

Regarding the CVD risk level, this study found higher level of risk among university staffs compared with the study conducted in Saudi Arabia. In this study, almost half of respondents (49.25%) projected to have > 10% risk for developing CVD within the next 10 years compare to 25% found in the study conducted in Saudi Arabia (Alzeidan et al., 2016). Age of the respondent participated is one of the reasons causing this different. In this study, the average age is older (43 years old) than that in Saudi Arabia (39 years old). As commonly known that older age are closely related to higher risk for chronic diseases, including CVD (Ekpenyong, Akpan, Ibu, & Nyebuk, 2012; Kusuma, 2014; Yu, Ma, Yang, Pang, Yu, Tao et., al., 2015).

Even though the majority of respondents identified in the low risk level of T2DM

and CVD, this level will almost certainly increase because of the respondents' age. In the other words, respondent in any risk category will possibly move to the higher/worse risk level because of their age addition. This trend will be worsened if the individual do not performing any recommended actions to lessen the identified risk factors. It is commonly known that older age is one of the significant risk factors for chronic diseases, either T2DM or CVD (Ekpenyong, Abdulghani H. Al-Saeed, Constantino, Molyneaux, D'Souza, Limacher-Gisler, Luo et al., 2016; Ekpenyong et al., 2011; Kusuma, 2014; Lindström & Tuomilehto, 2003; Yu et al., 2015).

These identified risk factors also invite institution concern because their potent to increase the next future health care charges, absenteeism, and low staffs' productivity (Kolbe-Alexander et al., 2008; Kuriyama, et al., 2004). This condition will produce higher burdens when the staffs develop chronic diseases (Fouad et al., 2017; Varekamp et al., 2010; Vuong et al., 2016).

Not only identified the existing risk factors separately (smoking, obesity, vegetables/fruits consumption, blood pressure, and physical activities) as did in the previous studies (Alzeidan, et al., 2016; Azra, 2016; Morris et al., 2011), this study calculated the score and interpreted those into the particular diseases vulnerability level. It probably provides beneficial issues. Firstly, the scoring and risk level categorization may provide clearer interpretation regarding the diseases vulnerability prediction. For instant, low risk for T2DM interpreted there is 1 in 100 persons will develop T2DM, slightly elevated risk level mean 1 in 25 persons will develop T2DM, and so forth (Lindström & Tuomilehto, 2003). Similarly, in CVD risk level where low risk level infers the individual's vulnerability for developing CVD over the 10 years is 10%, moderate risk level predict the individual's vulnerability is 10 – 20%, and so on (Kusuma, 2014).

Secondly, the scoring and risk level categorization may beneficial for formulating the recommended follow up actions. The important steps after the screening (early detection) are formulating follow up actions. The preventing actions are mostly provided

in general recommendation including managing diet, body weight, smoking cessation, and performing physical exercise. In some conditions, these recommendations may failure to accommodate the urgent requirement for medical examination particularly for them who identified in high/very high risk level category (MOHRI, 2014). Different with previous studies suggested that the respondents mostly lack of physical activity and less consume vegetables and diet, this study found the contrary trend. Regarding these risk factors, most of respondents in this study considered not vulnerable for developing chronic diseases; they reported regular physical exercise and consume fruits and vegetables. The policy related the routine exercise schedule every Friday morning may contribute to the trend. Some faculties where the respondents work in also have additional schedule for group exercise such as badminton, zumba, etc. Additionally, population in this study lived in the Sundanese culture area that culturally Sundanese food is complementarily with fresh vegetables ("lalapan") and fruits.

Regarding Quality of Worklife [QoWL], more than half of respondents in this study reported less satisfied (low) QoWL, where training and development found as lowest score domain. It is indicated that most of staffs invite improvement actions from management with widening opportunity for training and development as the priority ones. This finding invite the management concern since previous study suggested that low QoWL closely related to work productivity, career development, work performance, commitment and work satisfaction (Acheampong et al., 2016; Hatam et al., 2014; Mirkamali & Thani, 2011; Normala, 2010). Additionally, it is recommended for management to start improvement either for resulted products or provided services by improving the staffs' QoWL (Narehan, Haerunnisa, Razak, & Lapok; 2014).

Additional analysis found there was a significant positive relationship between T2DM risk level and CVD risk level, but there was no significant relationship between both risk levels with QoWL. It indicates that higher risk for T2DM will cause higher risk for CVD and vice versa. These strengthen

previous findings suggested that both diseases shared similar risk factors (age, blood pressure, body mass index). It also infers that controlling those similar risk factors will together lessen both diseases risk level (Martín-Timón, Sevillano-Collantes, Segura-Galindo, & delCañizo-Gómez, 2014).

Neither T2DM nor CVD risk level is associated with QoWL. These findings possibly caused by the risk factor identified here were the conditions that actually “healthy” conditions. Having raised blood pressure, abnormal body weight, lack of physical activities, as well as vegetable and fruits consumption are not significantly inhibit individuals in performing work. Moreover, work performance and work satisfaction that may closely related to the diseases risk level are only parts of the QoWL domains measured in this study.

The evidences signify that improving both, either QoWL or diseases risk level will potentially beneficial either for staffs or the institution (Acheampong et al., 2016; Hatam et al., 2014; Kolbe-Alexander et al., 2008; Kuriyama et al., 2004; Parsa et al., 2014). However, this study suggested that improving QoWL may not directly improve diseases risk level and oppositely. It also infers that important for the university management to develop separate program, either in lowering diseases risk level or in improving QoWL.

Research Limitation

The main limitation of this study is the participation rate that considered low (34.25%) compared with the population targeted. It cause the findings could not be generalized to the overall university.

Conclusion

This study aimed to identify the risk level of T2DM, CVD, and QoWL as well as the relationship between those variables. Generally, almost half of respondents had elevated risk level either for developing T2DM or CVD as well as less satisfied QoWL. Additionally, there is a significant positive relationship between risk level

of T2DM and CVD. Moreover, there is no significant relationship between both diseases risk level with QoWL. It indicates that lessening T2DM risk level will also beneficial in reducing CVD risk level but may not directly enhancing QoWL.

Eventhough there was no correlation between diseases risk level and QoWL, improving all of them are beneficial either for staffs or institution. It is important for university management to develop worksite health promotion program in order to improve the staffs’ opportunities in managing their identified diseases risk factors. This program could be initiated by intensifying the existing exercise program either in the faculty or university level. Additionally, university management also recommended enhancing the staffs’ opportunity in accessing training and development program such as by conducting inhouse training as part of the QoWL improvement program.

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Foot Massage Modification to Reduce Blood Pressure in Pregnant Woman with Preeclampsia

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Abstract

The Maternal Mortality Ratio (MMR) in Indonesia remains high, including in West Java province. One of the MMR causes is preeclampsia (24%). Currently, the management of preeclampsia is focused on pharmacological therapy. Preeclampsia is characterized by high blood pressure. Some studies revealed that non-pharmacological therapy was effective in dealing high blood pressure including foot massage. Foot massage has benefits both physiologically and psychologically. However limited study applied this massage among pregnant women with preeclampsia. The aim of this study was to determine the effectiveness of as a complementary therapy: foot massage to reduce of blood pressure among pregnant women with preeclampsia. The study applied quasi experimental design with time series approach. The samples were chosen using consecutive sampling technique. This study involved 30 pregnant women with preeclampsia. There were two steps of data collection. First, respondents' blood pressure was measured by researchers without any interventions for 6 days. Second, the 7th -12th respondents had 20 minutes massage, and observed blood pressure at the first minute before massage (pr-etest), and the 30th minutes after massage (post-test). Data were analyzed using Friedman Test. The result showed that there were no significant differences of mean systolic and diastolic blood pressure between pre-test and post-test ($p > 0.05$) in control period. Whereas, in the treatment period showed that there were a significant differences of mean systolic blood pressure between pre-test and post-test on the seventh day until twelfth day ($p < 0.05$). While, the significantly differences in mean of diastolic blood pressure between pre-test and post-test were present during the eighth until twelfth in treatment period ($p < 0.05$). This study revealed that there were significant differences in decreasing of blood pressure among pregnant women with preeclampsia after treatment by foot massage. The foot massage techniques can be used as one of the interventions to lower blood pressure in pregnant women with preeclampsia, however further research is needed to support the evidence based for nursing intervention especially in complementary therapies.

Keywords: Blood pressure, foot massage, preeclampsia, pregnant women.

Introduction

The world development framework has shifted from Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs) (World Health Organization, 2016). One of the SDGs goals is a good health, including reducing maternal mortality rate (MMR). MMR is the number of maternal deaths during pregnancy, childbirth, and childbirth caused by pregnancy, childbirth, after childbirth but not for other causes such as accidents, falls, etc. in every 100,000 live births (Ministry of Health of the Republic of Indonesia, 2011).

The SDGs' targeted that the MMR is below 70 per 100,000 live births by 2030. While, the Indonesian Population Demographic Survey (2014) reported that MMR in Indonesia was 228 per 100,000 live births (West Java Provincial Health Office, 2015). In addition, the Routine Report of Maternal Health Program (LRPKI) reported that West Java was the highest rank in the number of MMR, 765 cases of 5.019 cases of maternal deaths occurred in West Java in 2013. It is known that 24% cause of maternal death in Indonesia is caused by preeclampsia (Suryanti, 2015).

Preeclampsia is a specific multisystemic disorder in pregnancy characterized by hypertension and proteinuria after 20 weeks gestation (Rahmadhayanti, Hayati, & Saleh, 2014). Preeclampsia is needed to be treated appropriately because it would cause serious complications to mother and fetus including maternal complications and life-threatening fetal complications (Heazell, 2010). This would also impact mothers' and fetus quality of life.

Nowadays the therapy of preeclampsia focuses on conventional medical therapy and pharmacology. Those therapies are only affecting through physiological mechanisms. According to Nightingale's theory, human needs is holistic including physiological, psychological, social, and spiritual needs of both healthy and unhealthy. This holistic approach is illustrated by applying complementary therapies combined with the conventional medical therapy. One type of

complementary therapies that have proven by literatures in reducing blood pressure through physiological, psychological, social, and spiritual mechanisms is foot massage (Setyoadi & Kushariyadi, 2011).

The foot massage is a soft-tissue manipulation of the feet without any specific point that associated with other parts of the body (Coban & Sirin, 2010). Several studies have proven the benefits of foot massage physiologically and psychologically (Puthusseril, 2006; Kozier, Erb, Berman, & Snyder, 2010)

One physiological effect of foot massage is to reduce the blood pressure. Hayes and Cox's study showed that foot massage have reduced blood pressure, heart rates, and respiratory rates (Smith, Yamashita, Bryant, Hemphill, & Kutner, 2009). In addition, foot massage also decreased Mean Arterial Pressure (MAP), heart rates, and respiratory rates and increased oxygen saturation (Kaur, Kaur, & Bhardwaj, 2012; Setyawati et al., 2016). Another study found that the effect of foot massage was reducing pain, anxiety, depression, and other negative psychological perceptions that one of sign was low the blood pressure (Chacko, 2007; Halm, 2008).

Foot massage manipulation consists of 5 basic techniques: effleurage, petrissage, tapotement, friction, and vibration (Haakana, 2008). The foot massage was performed on the soles and back of the feet for 10 minutes (Wang, Tsai, Lee, Chang, & Yang, 2008). Other studies foot massage performed on the soles and back of feets and legs for 20 minutes (Halm 2008; Kaur et al. 2012; Setyawati et al., 2016).

Many researchs has proven the effect of foot massage physiological and psychological, even though it applied in different points of feets and times. Study literatures showed that foot massage in different points of massage and and times effected different blood pressure in the treatment group (Falkensteiner, Mantovan, Müller, & Them, 2011). However, there is no a study that assess the effectiveness of foot massage in pregnant women with preeclampsia. This study is aimed to determine the effectiveness

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of a complementary therapy: foot massage to reduce of blood pressure among pregnant women with preeclampsia.

Method

The research design was the quasi experimental with time series design. The population in this study were all pregnant women in the work area of Jatinangor Community Health Center (CHC=Puskesmas). The samples in this study were 30 pregnant women with preeclampsia in the PHC of Jatinangor. The samples were chosen using the consecutive sampling technique. The inclusion criteria were respondents who were diagnosed with preeclampsia, systolic blood pressure > 120 mmHg, diastolic blood pressure > 80 mmHg. The exclusion criteria were respondents with fractures, trauma, or leg injuries, and had venous thrombosis manifestations. The instrument of this study was an observation sheet including respondent's demographic

data, clinical data, and blood pressure data of respondent: pretest and posttest. Researchers also provided the foot massage intervention protocol for respondents. Data were gathered using time series design, respondents had two roles as control and interventions group. First, as the control group, researchers observed respondents' blood pressure for 1–6 days, in the first minute (pretest) and 30th minutes (posttest). Second, the same respondent obtained foot massage for 20 minutes from day 7 to day 12, along with the blood pressure was observed in the first minutes (pretest) and the thirtieth minutes (posttest). The data were analysed using Friedman Test. Based on the normality test, it was found that blood pressure data in this study was not normally distributed.

Result

The univariate analysis applied to analyze the characteristics of respondents including

Table 1 Characteristic of respondents (n=30)

Characteristic of Respondents		f	%
Age	No risk	20	66.7
	Have a risk	10	33.3
Work Status	Housewife	24	80
	Private employee	6	20
Education	College	1	3.3
	High school	16	53.3
	Junior school	12	40
	Elementary	1	3.3
Pregnancy Age	Trimester 2	16	53.3
	Trimester 3	14	46.7
Pregnancy Status	Primipara	6	20
	Multipara	24	80
Grand Multigravida	Yes	2	6.67
	No	28	93.3

Table 2 The mean distribution of respondents' blood pressure between Pre-Posttest on the control and intervention group

TD*	Observation	Control						Treatment					
		1	2	3	4	5	6	1	2	3	4	5	6
TDS	Pretest (average ±SD)	127,23 ±9,504	126,40 ±8,585	122,90 ±8,980	121,60 ±8,669	124,53 ±8,549	126,27 ±12,114	125,30 ±9,685	125,37 ±8,282	123,67 ±9,672	125,87 ±11,203	124,83 ±9,079	121,10 ±10,186
	Posttest (average ±SD)	124,37 ±10,287	124,60 ±7,863	122,93 ±9,606	123,57 ±9,054	122,27 ±9,784	124,07 ±7,939	119,40 ±9,561	118,53 ±8,764	116,57 ±9,623	119,57 ±9,533	116,93 ±7,723	113,83 ±10,613
	Z	-2,593	-1,419	-0,141	-2,150	-2,831	-1,223	-3,395	-4,649	-4,297	-4,610	-4,610	-4,459
	p	0,010	0,156	0,888	0,032	0,005	0,221	0,001	0,000	0,000	0,000	0,000	0,000
TDD	Pretest (average ±SD)	81,17 ±8,107	79,80 ±8,880	79,60 ±8,720	79,30 ±8,035	80,53 ±9,442	79,50 ±8,291	78,37 ±10,473	80,20 ±7,814	79,10 ±8,515	79,93 ±9,552	79,70 ±9,086	78,47 ±8,565
	Posttest (average ±SD)	80,50 ±8,341	80,53 ±7,838	80,07 ±7,714	79,33 ±8,001	79,83 ±8,502	80,80 ±5,857	77,63 ±8,455	75,80 ±8,973	76,43 ±8,561	76,50 ±8,496	75,97 ±7,449	75,33 ±8,568
	Z	-1,160	-0,069	-0,433	-0,096	-1,088	-0,523	-0,743	-3,817	-3,117	-3,825	-3,773	-2,980
	p	0,246	0,945	0,665	0,923	0,277	0,601	0,458	0,000	0,002	0,000	0,000	0,003

*mmHg

of age, occupation, education, gestational age, and pregnancy status (primipara or multipara). Frequency distribution of respondents' characteristics present in table 1.

Table 1 revealed that the majority of respondents' age were not at a risk for pregnancy (66,7%), they were a housewife (80%), attended high school (53,3%), trimester two (53.3%), multiparas (80%), and only two of them were grand multigravida.

Table 2 presented that the mean difference of systolic blood pressure between pretest and posttest were significant. The first treatment period (p = 0.001), second day (p = 0.000), third day (p = 0.000), fourth day (p = 0.000), fifth day (p = 0.000), and the sixth day (p = 0.000). The same trend also found in the diastolic blood pressure. The mean differences between pretest and posttest were the second day of treatment (p = 0.000), third day (p = 0.002), fourth day (p = 0.000), fifth day (p = 0.000), and day sixth (p = 0.003). Table 2. The mean distribution of respondents' blood pressure between Pre-Posttest on the control and intervention group

Discussion

The characteristics of pregnant women in this study were multiparous, aged 20 to 35 years, and only two women were grand multigravida. Respondents in this study have no risk factors of preeclampsia. Preeclampsia is a specific condition of pregnancy characterized by hypertension after the 20th week of pregnancy, and women had history of normal blood pressure (Bobak et al., 2004; Lewis, 2015).

Signs and symptoms of preeclampsia arised during pregnancy and disappeared after giving birth. No particular criteria for whom would suffer from preeclampsia. There were risk factors associated with preeclampsia including primiparas, grandmultigravids, large fetuses, multiple pregnancies, obesity, and maternal age less than 20 years or more than 35 years (at risk). Respondents in this study excluded those risks, in fact they suffered of preeclampsia. Health workers should detect preeclampsia immediately whether pregnant women in risk or no risk conditions.

The effect of foot massage to the blood pressure of pregnant women with preeclampsia

The results of this study indicated that during the control period (no foot massage), respondents' blood pressure did not decrease significantly. After foot massage the mean of systole and diastole of pregnant women's blood pressure decreased significantly both pretest and posttest. Physiologically, foot massage is part of cutaneous stimulation that would help the body to achieve homeostasis through arrangement of the extrinsic and intrinsic of peripheral blood flow. In extrinsic setting, smooth and rhythmic vibrations of muscles because of foot massage manipulation impacted vasomotor activities in the medulla (Guyton & Hall, 2007; Marley, 2005; Price & Wilson, 2005). Vasomotor activities mean releasing acetylcholine and histamine that impact relaxation of muscles and vasodilatation of arterioles (Marley, 2005). As a result, decreasing peripheral resistance, increasing the blood flow through the microvascular circulation section, and decreasing in the blood pressure.

The intrinsic processes, when blood flow have increased via microvascular circulation, it would stimulate secondary mechanisms that impacted arteries dilatation (Guyton & Hall, 2007). Endothelial cells lining arterioles and small arteries synthesize would affect the level of contraction of artery walls. These ingredients are vasodilator substances called endothelial relaxation factors, which essentially consist of nitric oxide that a half-life in the blood for only 6 seconds. Healthy blood flow via arteries would cause "shear-stress" in endothelial cells due to the viscous pull of blood to the vascular walls. This stress would change the shape of endothelial cells and increase the release of nitric oxide. The nitric oxide would be impacted relaxation and dilatation arterial walls. This is a beneficial mechanism because the dimensions of large blood vessels increased secondary, when the microvascular flow is increased.

The foot massage stimulates parasympathetic nerve fibers (Eimani & Eshq, 2004). One of the function of these

parasympathetic fibers is innervating sinoatrial and arterioventricular nodes (Hudak & Gallo, 2010). Parasympathetic stimulation releases acetylcholine near nodal cells and decreases depolarization frequency, as a result decreasing heart frequency and rates. Decreasing heart rate impacted ventricular filling times are longer than usual, resulting in larger stroke volume and lead to the increase of cardiac output (Marley, 2005). A good cardiac output would improve blood circulation throughout the body including to the uteroplacental-fetal system. The extrinsic and intrinsic processes of peripheral blood flow, the foot massage would reduce the blood pressure of pregnant women with preeclampsia.

Several studies have proven the effect of foot massage on blood pressure of cancer patients and postoperative patients. Quattrin et al.'s (2006) study showed a significant decrease in systolic blood pressure ($p < 0.001$) and a significant decrease in diastolic blood pressure ($p < 0.05$) in cancer patients with chemotherapy after foot massage. In addition, Chacko's (2007) also found a significant reduction in blood pressure in post-surgical abdominal patients after foot massage ($p < 0.05$).

Foot massage is a systematic and rhythmic touch using manipulation of whole areas of soft tissues in the feet. Foot massage has been done for thousands years with various techniques worldwide, including Egypt, India, and China. This massage has also become popular in some developed countries such as USA, UK, and Japan (Fan, 2006). According to the Oxford Concise Medical Dictionary, the basic this complementary therapy is that the feet have points that are related to other parts of the body. So if there is manipulation of soft tissue, for example the soft tissue of the foot, it would be affected in health improvement.

Foot massage is an easy and powerful element (Puthusseril, 2006). Physically, foot massage would be impacted relaxing muscles, relieving pain and congestion by releasing lactic acid, improving blood flow and lymph, and stretching joints. Foot massage is also considered to release the body's toxins and

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stimulate the immune system. In the mental-emotional area, foot massage would relieve anxiety and provide a sense of relaxed well-being.

Several studies have demonstrated foot massage to decreased perception of pain in post-surgery patients in general, extensively (Wang & Keck, 2004), in post-surgical abdominal patients (Chacko, 2007), and in post-cesarean section patients (Degirmen, Ozerdogan, Sayiner, Kosgeroglu, & Ayranci, 2010). Foot massage has also been found to have an effect on the reduction of lower limb edema in pregnancy (Coban & Sirin, 2010), decreased anxiety and depression in palliative care (Puthusseril, 2006), decreased agitation in dementia patients (Moyle, Johnston, & O'Dwyer, 2011), as well as decreased pain, depression, anxiety, stress, and weakness in cancer patients (Cassileth & Vickers, 2004; Quattrin et al., 2006; Falkensteiner et al., 2011; Kim & Oh, 2011). This study finding in line with Hayes and Cox's study found that a significant reduction of Mean Arterial Pressure (MAP) of 25 patients at Intensive Care Unit (ICU) after foot massage (Smith et al., 2009). In addition, Eimani and Eshq's (2004) also found a significant decrease of MAP ($p < 0.001$) after foot massage of 46 stroke patients who hospitalised in ICU. Furthermore, Shaban, Amiry, Mehran, and Kahrari's (2004) study showed a significant decrease of MAP after foot massage in 50 patients at the General Intensive Care Unit (GICU).

Conclusion

There was no difference in the mean of systolic and diastolic blood pressure both pretest and posttest ($p > 0.05$) in the control period from day 1 to day 6. It was different with the intervention period, there was a significant difference in the mean of systolic blood pressure between pretest and posttest on day 7 to day 12 ($p < 0.05$). In addition, the mean of diastolic blood pressure was significantly difference at the 8th day of treatment until the 12th day ($p < 0.05$) for pre and post test. This study has proven there is a significant difference in decreasing blood pressure in pregnant women with preeclampsia after foot

massage.

This study has proven there is a significant difference in decreasing blood pressure of pregnant women with pre-eclampsia after foot massage. Foot massage techniques can be used as one of the interventions to reduce blood pressure in pregnant women with pre eclampsia. However, there is a need of further development of this intervention, so that it can be a useful nurses' intervention and evidence as a companion intervention for pharmacology therapy.

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Factors Associated with Death Anxiety in Elderly Batak Tribe who Live in Bandung

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Abstract

Death is something definite. Awareness about the certainty of the coming death raises different responses depending on each person, including the elderly. Differences in social background, beliefs, and life experiences have shaped their respective levels of spirituality elderly, but the elderly still be experiencing anxiety to face the death. Not infrequently the death anxiety felt excessively, causing symptoms that can be observed. This study aimed to analyze the factors associated with death anxiety in elderly Batak tribe who live in Bandung, which includes the quality of life, life satisfaction, and culture. The study employed a descriptive correlational design, particularly cross-sectional design. There were 98 elderly who served as participants. The samples were chosen by using accidental sampling methods and criteria for inclusion. The data were analyzed by using Chi-square and binary logistic regression. The results showed that there was correlation between life satisfaction, and culture with death anxiety in elderly Batak tribe who live in Bandung (the two of factors has p value < 0.001 each) and with the binary logistic regression analysis of the factors known that the satisfaction of life is the most dominant factor that associated with death anxiety with OR value of 0.122. Community nurses need to pay attention to the improvement of satisfaction of life of the elderly. High satisfaction of life of elderly people have an impact on reducing the risk of death anxiety in elderly people, without forgetting other factors.

Keywords: Culture, death anxiety, elderly, life satisfaction, quality of life.

Introduction

Aging was a process that which is natural to be facing by human. In this process, the most crucial stage is the stage of getting old. A dividing line between the ages of adult and elderly is usually the age of 60 years (Santrock, 2004). At this stage, the elderly experience decreasing in physical condition, psychologically and socially that is mutually interact with each other. These conditions are the causes of the various problems in the elderly and others who live with them. For some people, age tend accompanied by the growing awareness of impending death and this awareness led to some people consider the arrival of death is the same as the arrival of a friend (Litot, 2010).

Death is something that is certain, which in turn all people would agree and accept the fact that death is the end of the implementation of the development tasks. Lack of awareness about the certainty of the coming death raises different responses depending on each person. Differences in social background, beliefs, and life experiences have shaped their respective levels of spirituality elderly, but the elderly still be experiencing anxiety will face death. Not infrequently the death anxiety felt excessively, causing symptoms that can be observed from the outside.

Carpenito-Moyet (2008) mentioned the death anxiety as a condition in which individuals experience feelings of anxiety because of the discomfort that is not clear or vague or fear generated by the perception of a threat to the existence of a person, whether real or imagination. Death anxiety can be related to the arrival of death itself, how to die, and pain or suffering that may accompany the arrival of death (Abdel-Khalek, 2005). These conditions may interfere with the development tasks that must be passed by an elderly, one of which is to prepare his own death (Monks, 2009).

Experts of gerontology revealed that the elderly actually have a high probability of experiencing anxiety disorders caused by certain factors (Santrock, 2004). Smith, Ingram, and Brighton (2009) mentioned that the anxiety of death in the elderly is influenced by the quality of life and satisfaction of life. While Lehto and Stein (2009) also mentioned

that culture is also an influencing factor. Lehto and Stein stated that death anxiety is also formed and can vary by culture adopted by someone. Greenberg et al. which sparked Terror Management Theory (TNT) states that people also use culture as death anxiety reducer.

Based on review of literature on death anxiety in the elderly, not many was found that relate death anxiety to quality of life, life satisfaction, especially with the culture. Research related to culture and death anxiety is still very little, while Lehto and Stein (2009) states that death anxiety is also formed and can vary by culture adopted person. Culture affects variation in how one views the death and about what happens when someone dies. The focus of the research to be conducted by the researcher himself is the anxiety of death in elderly Batak tribe. Interestingly, the characteristics of the Batak tribe, migrated as far as any kind, at least have a strong desire to: (1) Pass away with certain conditions which are no longer mourned his death with great weeping and sorrow, but celebrated as a party or event joy, (2) Want his body was taken to his hometown in Tapanuli (North of Sumatera) to be buried there, near the tomb of grandparents, parents, and siblings (*mulak tu bonapasogit* = return home; living or dead).

It is predicted that the Batak culture can potentially lead to an increase in death anxiety in the Batak people, particularly the elderly. Elderly Batak are eager to die in a state of *saurmatua* (the term for died in old age, the highest levels of death in Batak culture, and ceremonies for this death is a party) and also greatly longed to be buried in his native land. Term *saurmatua* itself apart elderly also includes *hagabeon* (successfully reproduce), *hasangapon* (honor), and *hamoraon* (wealth). Death anxiety can occur especially due to the issues of reproduce, honor, and wealth that not necessarily be owned by every elderly of Batak.

An interesting phenomenon, the Batak tribe of death is the present of turmoil as an expression of death anxiety related to levels of death in the Batak culture. Researcher tried to get information out of 4 elderly couples of Batak tribe that researcher met in Bandung with the age of 61–69 years, on 16 and 17 July 2014. When the discussions

concerning the death, it was revealed that it is a burden on the mind as well as for their own grief of knowing that if dies excluding levels or categories saurmatua death. Further excavations in mind there are times when the elderly to experience feelings of anxiety, it is difficult to sleep, and irritability associated with thinking that if death is not saurmatua elderly.

Based on the phenomena above and the results of interviews with four elderly couples and an elderly widow Batak tribe raises the curiosity of researchers to see “Factors associated with death anxiety in Batak tribe elderly who live in Bandung”. Referring to Simanjuntak (2006) which states that basically migration Batak people out of the land of his birth with the same reason, namely to obtain hagabeon (successfully reproduce), hasangapon (honor), and hamoraon (wealth). Characteristics of Batak migrants equally among others accepted to the culture, forming clan associations, and how much was migrated and urban life was affected, but still makes hometown as the best protection. These things became researcher considerations to choose the respondents who live in Bandung. The aim of this study was to know the factors that deals with anxiety of deaths in the tribe of batak seniors living in bandung .

Method

The type of research used is quantitative research with the design of descriptive of correlational with the approach of cross-sectional which aimed to know the factors associated with death anxiety of the elderly in the tribe of Batak living in Bandung. That means that researcher looking for the relation

between independent variables (factors) with dependent variable (death anxiety). The population in this study were elderly in Batak tribe who live in Bandung whose numbers are certainly unknown. Determining of sample size used the formula of Lemeshow for the population is unknown (infinite), so that the sample was 96 elderly of Batak.

The instrument for measuring the degree of death anxiety use Death Anxiety Scale; Questionnaire of Batak culture is designed to measure the elderly appreciation of culture. This questionnaire has been checked and approved for use in this study by DR. Herman Nainggolan, an anthropologist who specializes Batak culture and taught at several universities in North Sumatra. The questionnaire contains 34 questions. Questionnaire World Health Organization Quality of Life (WHOQOL) was used to measure the quality of life (Milosevic et al., 2012 and Silva et al. 2014). The satisfaction of life for the elderly was measured using the Scale With Life Satisfaction (SWLS) developed by Diener et al. and was published in 1985.

In this study used Chi-square test, because the variables to be studied in the form of categorical.

In the field of health to determine the degree of relationship used measure of relative risk (RR) and Odds Ratio (OR). OR size used in the design of case-control and cross-sectional. In this research also used a binary logistic regression test to find out which factors most associated with the anxiety of death of elderly Batak who lived in Bandung.

Result

Table 1 Chi-Square Results

No	Variable	P Value	OR
1	Correlation between 1st domain quality of life (physical) with death anxiety	0.928	0.959
2	Correlation between domain 2nd quality of life (psychology) with death anxiety	0.106	2.105
3	Correlation between 3rd domain quality of life (social) with death anxiety	0.553	1.305
4	Correlation between 4th domain quality of life (environment) with death anxiety	0.706	1.179

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5	Correlation between satisfaction of life with death anxiety	< 0.001	9.9
6	Correlation between culture with death anxiety	< 0.001	19.25

Table 2 The First Modeling of Binary Logistic Regression

	Wald	Sig.	Exp(B)	95% C.I.for EXP(B)	
				Lower	Upper
QOL 2nd domain	.419	.517	1.406	.501	3.940
Life Satisfaction	8.861	.003	.133	.035	.503
Culture	5.377	.020	.070	.007	.662
Constant	5.653	.017	22.654		

Table 3 The Final Modeling of Binary Logistic Regression

	Wald	Sig.	Exp(B)	95% C.I.for EXP(B)	
				Lower	Upper
Life Satisfaction	10.116	.001	.122	.033	.445
Culture	5.365	.021	.071	.008	.666
Constant	7.400	.007	29.624		

More than half of respondents (67.4 %) having a bad quality of life in physical. More than half of respondents (59.2%) having a bad quality of life in psychological. More than half of respondents (60.2%) having a good quality of life in social. More than half of respondents (52%) having a bad quality of life in the domain of environment. Most of Batak tribe elderly (83.7%) who live in Bandung. Almost all (91.8%) elderly Batak tribe who live in Bandung still appreciate the culture, although it is known almost half have 40–50 years living overseas. More than half (68.4%) elderly Batak tribe who live in Bandung has a low death anxiety.

Chi square test was obtained value of $p < 0.001$, it can be concluded that there is a strong relationship between the culture of the anxiety of death in elderly respondents Batak tribe who live in Bandung. Value OR = 19.25 means that respondents with a high cultural appreciation of 19 times likely to experience higher death anxiety than respondents with low cultural appreciation.

The test was used logistic regression enter method in which there were several stages before the final model obtained. The first step is to see the results of bivariate analysis, the study variables are incorporated into the logistic regression is a variable that has a

value of $p < 0.25$. Based on the results of the bivariate analysis it is known that the value of $p < 0.25$ was on quality of life (domain 2 psychology), life satisfaction, and culture. Thus it can be continued for a multivariate analysis on these three variables.

Based on multivariate modeling that has been done, from the initial model unknown variables that contribute to the level of anxiety elderly Batak tribe who live in Bandung is the life satisfaction and culture with p value < 0.05 .

Multivariate modeling is done by issuing a variable p by one of its greatest value to all its p value < 0.05 . The next stage is to modeling after removing the second domain of life quality due to $p > 0.05$. modeling is done by issuing a variable p by one of its greatest value to all its p value < 0.05 . The next stage is to modeling after removing the second domain of life quality due to $p > 0.05$.

Exp (B) obtained showed that the variables most associated with the level of death anxiety in elderly Batak tribe who live in Bandung is living Satisfaction with Exp (B) or OR = 0.122.

Based on the above tables can be summarized as follows:

(1) Life satisfaction (OR = 0.122)

The results obtained odds ratio analysis of life

satisfaction variable is 0.122 means elderly Batak tribe who live in Bandung who has a low life satisfaction 0.122 times higher risk for experiencing high death anxiety compared to elderly who have high life satisfaction.

(2) Culture (OR = 0.088)

The results obtained odds ratio analysis of cultural variables is 0.088 means that elderly Batak tribe who live in Bandung with a high cultural appreciation 0.088 times higher risk for experiencing high death anxiety compared to elderly with low cultural appreciation.

(3) To determine which variables most associated with the dependent variable, we can determine from the OR of the significant variables, the greater the value of OR means greater relationship to the dependent variable. Table 3 shown that variable life satisfaction has a higher OR, so this variable was the most associated with death anxiety.

Discussion

In this study there was no significant association between quality of life (which represent each of the domains of physical, psychological, social, and environmental) and the anxiety of death in the elderly. Physical domain in terms of aspects of physical health more than half are experiencing poor quality of life, but the possibility of elderly sees this as a fairness condition because more than half of the respondents aged 70 years and over. According to psychological domain more than half of the respondents experienced a poor quality of life. It is also supported by the data that more than half of the respondents aged 70 years and over, plus the respondents said that has not been entirely of children they had been married.; This is usually a separate psychological burden for the elderly Batak.

In Social domain more than half of the elderly Batak tribe has a good quality of life. This condition is supported by the data that up to the time of collection mostly elderly still have a spouse (husband or wife). In addition, all respondents are still involved in social activities, especially in the elderly and in the container section Batak community activities (customs), but this condition was apparently not related to death anxiety they experience. Domain environment in terms of:

freedom, physical safety and security, home environment, financial resources, health and social care, the opportunity to acquire new skills and information, participation and opportunities for recreation, activity in the environment, and transportation. More than half of the elderly experience poor quality of life. The poor quality of life can be affected environment (Suryani, 2014) that advanced age (more than half have been aged 70 years and over) so it had limitations in terms of freedom, physical safety and security, as well as transport, but the results of the analysis also did not have a significant association with death anxiety they experienced.

From the results of this study, we can see that there was was a significant relationship between life satisfaction with the death anxiety in the elderly. This results is corresponds to some research on the relationship between life satisfaction and death anxiety. Research results of Abdel-Khalek and Al-Sabwah (2005) in Egypt showed the relationship between life satisfaction scores with scores on Death Anxiety Scale (DAS). Similarly, the results of research Roshani (2012) showed that there is a significant relationship between life satisfaction and death anxiety correlation coefficient -0.262 ($P < 0.004$). In other words, there is a significant negative correlation between life satisfaction and death anxiety so that the increase in life satisfaction, death anxiety decreased.

The results showed that most of Batak tribe elderly who live in Bandung still has high appreciation of Batak culture. The Batak people usually remain bound by customary culture wherever they are, even in the seacoast area. High appreciation of the value of culture is also a reflection of one's cultural identity, including the elderly Batak tribe. Therefore, not surprisingly, the elderly of Batak tribe despite living overseas remained true to its culture.

The results of this study show that people are in overseas Batak although still adhere to traditional culture, including the death that does have a cultural dimension from the standpoint of Batak tribe. High appreciation of the Batak culture proven to give effect to the anxiety of death in the Batak tribe elderly who longed to experience the death of an ideal.

Unlike the finding in this study, Lehto's study found that more than half of the elderly experiencing a high death anxiety. The high death anxiety among the elderly is closely related to the decline in physical and psychological problems (Lehto, 2009). High death anxiety can be caused by what is happening in the lives of individuals. Grossberg (2001) mentioned that the event may be associated with loss events that suddenly, for example, pensions and financial problems, the illness or death of a loved one; decline in physical, cognitive, or emotional health of the elderly.

Multivariate analysis showed that life satisfaction and cultural factors significantly associated with death anxiety in Batak tribe elderly who live in Bandung, but statistically life satisfaction factor was the most closely correlated. The results of this analysis did not fully comply with Smith, Ingram, and Brighton (2009) which stated that the death anxiety in the elderly is influenced by the quality of life and life satisfaction of the elderly. However, Lehto and Stein (2009) mentioned that cultural factors play a role in influencing the level of death anxiety of elderly.

Conclusion

The results showed that there was no significant correlation between the quality of life as measured by the WHOQOL-BREF with the anxiety of death in elderly Batak tribe who live in Bandung. WHO itself mean quality of life consists of domains that include the physical domain, psychological domain, social domain, and environmental domains.

When someone entered the phase of elderly, they will undergo changes, whether physical, psychological, social, and environmental. These changes can affect the quality of life of the elderly. Quality of life when viewed from the physical health dimension is the evaluation of acceptance and happiness will be aspects of physical health as the absence of pain and discomfort due to illness, wellness and energy, sleep quality, and free from drug addiction. Thus, more satisfied person's physical health aspects, the higher the quality of life.

The conclusion showed that most of Batak tribe elderly who lived in Bandung has high life satisfaction. Life satisfaction is one's ability to enjoy the experiences with the full significance. Life satisfaction can be achieved by having a decent income, good health and an active lifestyle in the family and friendship. Life satisfaction arising from fulfilling the needs or expectations and are the cause or the means to enjoy. Elderly who can accept themselves and the environment in a positive way will be satisfied with his life.

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The Effect of Parent Distraction Coaching Used The Toy on Pain Intensity of 1–5 Year-Old Children during Iv (Intravenous) Insertion

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Abstract

Intravenous insertion is the cause of pain that the children most commonly experience when children are being hospitalised. Repeated and insurmountable in early childhood, it will impact trauma to the child, so that pain management is a main priority for nurses. However, nurses have barrier to implement pain management effectively. Therefore, involvement of the parents in pain management was so important. One of the non-pharmacological pain management involving parents is distraction by the parent (Parent Distraction Coaching). The purpose of this research was to examined the difference intensity of pain children from ages 1–5 years old between intervention group and control group during intravenous insertion. This research uses quasi experimental methode by applying the pre-experimental design which is called the intact group comparison. Through the consecutive sampling, the data has been collected from 17 children in each group, both control and intervention groups. Respondents in the intervention group were the children undergoing the intravenous insertion and they were accompanied by their parents' distraction after the parents got the parental distraction coaching, while respondents in the control group were the children undergoing the intravenous insertion in accordance with the hospital procedures but they were not accompanied by their parents' distraction. The assessment of pain intensity was done by using FLACC instruments (Face, Legs, Activity, Cry, and Consolability). The data were analyzed descriptively and tested by using inferential t test-independent where the value of $p < 0.05$. From the results of the statistical tests using t test-independent test, the value of p obtained is 0.005 (p value < 0.05). This value indicates that there is a significant difference between the intensity of pain experienced by children in the control group and in the intervention group during the intravenous insertion. Based on these results, nurses are expected to be aware of the importance of parents or family involvement in reducing the pain experienced by children during intravenous insertion, so that the implementation of pain management in children becomes more effective.

Keywords: Distraction, IV (Intravenous) Insertion, pain.

Introduction

The morbidity rate of patients aged 0–21 in Indonesia was 15.76% where 27.04% of that number was patients aged 0–4 (UNICEF, 2012). Looking at the data, it can be assumed that the number of children being hospitalized will increase. When children are admitted to hospital, they often go through the procedure of IV (intravenous) insertion as a medium for drug intake, fluid and electrolyte fulfillment, and nutrient intake (James, Ghai, Rao, & Sharma, 2012; Kyle, 2014). The action of the IV insertion is the most common cause of pain that children experience during hospitalization (Cohen, 2008; Kennedy, Luhmann, & Zempsky, 2008).

Behaviors that indicated more severe pain during IV insertion were shown primarily by 1–5 year-old patients (toddler and preschool children) (Mediani, Mardiyah, & Rakhmawati, 2005). Unresolved pain will cause physical effects on children such as rapid and shallow breathing that can lead to hypoxemia, inadequate lung expansion and ineffective cough, an increase in pulse rate, an increase in blood pressure, an increase in stress hormone production (cortisol, adrenaline, catecholamine) that increases metabolism, inhibits healing and decreases immune function and also causes psychological effects such as trauma (Kennedy, Luhmann, and Zempsky, 2008; Twycross, Dowden, & Bruce, 2009).

Nonpharmacologic pain management should be the primary concern and priority for nurses in order to overcome the pain problems that are experienced by children. However, the implementation of pain management often finds obstacles in the work activities such as the time constraints of nurses (Yulianti, 2010; Yoo, 2011; Koller & Goldman, 2012). In accordance with the results of Mediani's research (2014), there is a conflict within nurses in Indonesia where the desire of nurses to perform effective pain management can not be done because of the pressure of the role of professional nurses such as the complex conditions in the workplace and the many workloads. To streamline the management of pain on nursing services in children, nurses should establish cooperative relationships with parents or families to provide a better

treatment to the children. One of the non-pharmacological pain management involving parents or family is the distraction performed by the parents (Parent Distraction Coaching) (Uman, Chambers, McGrath, & Kisely, 2008). Parent Distraction Coaching during IV insertion is very important because parents are more sensitive to understand the wishes and behavioral changes of their children when invasive procedures are performed, so that parents can be the main intermediary in the direct care for their children (Bowden, 2010; Commodary, 2010). Parent distraction coaching is very easy and safe for parents to reduce pain experienced by children, where this activity can also increase parental involvement in childcare (Uman et al., 2013; Mc Carthy, 2014). Research which proves the influence of parent distraction coaching on the intensity of pain in children when the invasive procedure is performed is very limited. The results of previous research prove that parent distraction coaching effects on child distress. So in this study, it is necessary to review the effect of parent distraction coaching on pain intensity experienced by children during IV insertion. Based on the preliminary study conducted by researcher in the childcare room at the Central General Hospital of Dr. Hasan Sadikin Bandung in December 2016 on 6 children, the researcher saw that the children were crying constantly, thrashing, and screaming during the intravenous insertion. Nurses also looked anxious when the children showed their excessive reaction to the pain during an IV insertion. Therefore, the children were forced to have their hands and feet firmly fixed, and the parents are not involved in this process. Although parents were present in the room at that time, they were not active in doing the distraction. Repeated exposure of pain may increase the sensitivity to the pain and cause trauma when the children go through the invasive procedures such as IV insertion.

Based on the results of the interviews with several nurses in the nursery room, the nurses said that the main problem in children when the IV insertion is performed is the children cried continuously and even thrashed especially the toddler and preschool children. During the IV insertion procedure, the effort taken by the nurses to

reduce the intensity of pain in children is to ask the children to take a deep breath, but this can only be done to the children who already understand the verbal communication. Based on this phenomenon, researcher is interested to examine “The Effect of Parent Distraction Coaching on Pain Intensity of 1–5 Year-Old Children during IV (Intravenous) Insertion at The Central Hospital of Dr. Hasan Sadikin Bandung”. This study aims to determine the difference between the intensity of pain experienced by 1–5 year-old children in the control group and in the intervention group during the IV insertion where the study site is The Central Hospital of Dr. Hasan Sadikin Bandung.

Method

This research uses quasi experiment method by applying pre-experimental design called intact group comparison. The number of samples which was observed was 34 children who were undergoing IV (intravenous) insertion, in which the intervention group and the control group consisted of 17 children each with the following criteria: a) child with compost mentis, awareness level b) children who are not experiencing interference mentally, c) parents/caretakers of children educated last a minimum of high school. Whereas the criteria eksklusif respondents are: a) child who suffered shock, shortness of breath and need immediate handling (civil defence emergency circumstances), b) child who suffered cancer, c) parents/caretakers of children who experience the disorder of speech, d) parent/caregiver a child who has hearing loss. The intervention group is a group of children who were undergoing the IV insertion and they were accompanied by their parents’ distraction, while the control

group is a group of children who were undergoing the IV insertion in accordance with the hospital routine and they were not accompanied by their parents’ distraction. The sampling technique is consecutive sampling. The assessment of pain intensity was done by using FLACC instruments (Face, Legs, Activity, Cry, and Consolability). Pain measurement at 5 seconds before insertion to 15 seconds while insertion. The data were analyzed descriptively and tested by using inferential t test-independent where the value of $p < 0.05$ where the aim is to find out the difference between the intensity of pain experienced by the children in the control and intervention groups when they were undergoing the IV insertion. Respondent’s characteristics; the sex of the child, the child’s experience, gender parents using statistical test of chi square and the age of the child using the mann-whitney statistical test (distribution data was not normal).

Result

The research has been conducted on 34 patients aged 1–5 year-old who are undergoing IV (intravenous) insertion in the nursery room where they meet the inclusion criteria of the study. The location of the study was in the Kenanga-1 nursery room at the Central General Hospital of Dr. Hasan Sadikin Bandung. The data that have been collected is analyzed in univariate and bivariate. The results are presented in the following table:

1. Univariate Analysis

Univariate analysis was performed to describe respondent’s characteristic, intensity of pain in children during the IV insertion, and ability level of parents to perform distraction to their children.

a. Characteristics of Respondents

Table 1 Characteristics of Respondents in Control and Intervention Group

Characteristics		Control Group (n=17)		Intervention Group (n=17)		Total		p Value
		n	(%)	n	(%)	N	(%)	
Gender of The Child	Male	11	64.7	10	58.8	21	61.8	0.724
	Female	6	35.3	7	41.2	13	38.2	
IV Insertion experiences	Ever	14	82.4	16	94.1	30	88.2	0.287
	Never	3	17.6	1	5.9	4	11.8	

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Age of the Child	Toddler (1-3)	12	76.5	13	23.5	25	73.5	0.697
	Pre-school (4-6)	5	70.6	4	29.4	9	26.5	
Gender of The Parents	Male	1	5.9	1	5.9	2	5.9	1.000
	Female	16	94.1	16	94.1	32	94.1	

Note: value of *p* used the chi-square statistical test

Table 2 Distribution of Parents' Ability Level in Performing Distraction to Children when They Were Undergoing IV (Intravenous) Insertion

Group	Ability of Distraction in Phase I					
	Good		Enough		Less	
	n	%	n	%	n	%
Provided with education (Intervention n = 17)	10	58.8	5	29.4	2	11.8
Not provided with education (Control n = 17)	3	17.6	7	41.2	7	41.2
Total	13	38.2	12	35.3	9	26.5

Group	Ability of Distraction in Phase II					
	Good		Enough		Less	
	n	%	n	%	n	%
Provided with education (Intervention n = 17)	10	58.8	5	29.4	2	11.8
Not provided with education (Control n = 17)	3	17.6	6	35.3	8	47.1
Total	13	38.2	11	32.4	10	29.4

Table 1 shows that most of the respondents were male (61.8%), most of the respondents had IV insertion (88.2%), most parents had toddlers (73.5%), and most parents or caregivers who accompany their children when their children undergo IV insertion are women (94.1%). From the results of homogeneity test of respondents in the control group and intervention group, the researcher got *p* value > 0.05 for the characteristics of children's gender, children's experience, age of the children and gender of the parents. It shows that those characteristics in the control and the intervention group are homogeneous.

b. Parent's Ability Level in Parent Distraction Coaching

Table 2 shows that in the first phase there were 41.2% of parents or babysitters in the

control group (groups not getting education about distractions) who had low ability to perform distractions, and 47.1% of parents or babysitters in the control group (the non-educated group on distraction) who also had low ability to perform distraction in the second phase. Table 2 also shows that in the first phase there were 58.8% of parents or babysitters in the intervention group (distraction-educated groups) who had good ability to perform distractions, and there were 58.8% of parents or babysitters in the group control (the group that gets education about distraction) who has good ability to perform distraction in the second phase. The first phase is 2 minutes before undergoing the infusion, while the second phase begins when the children were stabbed with an intravenous catheter until 2 minutes after they were

stabbed with an intravenous catheter.

2. Bivariate Analysis

Before the bivariate analysis was done, the researcher performed the data normality test which is the absolute requirement on the parametric test. The normality test was done inferentially by looking at the value of p in the Shapiro-Wilk test. The normality test results

of pain intensity in children when they were undergoing the IV (intravenous) insertion in the control and intervention group showed that the intensity of pain in both groups was normally distributed (p value > 0.05). Furthermore, the researcher conducted a t-independent parametric test as illustrated in the following table:

Table 3 Comparison Analysis of Mean Scores of Pain Intensity in Children When They Were Undergoing The IV Insertion in The Control and Intervention Group

Group	N	Mean Score	Difference of Mean Score (CI 95%)	p value
Control	17	7.12	1.647 (0.52- 2.76)	0.005
Intervention	17	5.47		

Note: The value of p was the result of unpaired t test

Table 3 shows that the mean score of the pain intensity experienced by children in the control group when they were undergoing the IV insertion was 7.12 and the mean score of pain intensity experienced by children in the intervention group when they were undergoing the IV insertion was 5.47. Based on the further analysis, it was found that there was a significant difference in mean score between the intensity of pain experienced by the children in the control group and the intensity of pain experienced by the children in the intervention group. It was evidenced by the value of p < 0.05 (p = 0.005 at α = 0.05).

they will experience, so they feel greater pain when they were undergoing the IV insertion. But in preschool children (3–5 years), children are more easily persuaded and given understanding of the purpose of the IV insertion. As children get older, their cognitive function and coping mechanisms get better. According to Putri, Mardhiyah, and Widianti (2015), preschoolers also depend on the emotional support from their parents or family.

Discussion

a. Characteristics of Respondents

Based on the results of this study, it can be described that most respondents were toddlers. Toddlers tend to be more agitated and very active when they feel pain because they are more sensitive to the events around them, but they are easier to calm down so that it helps the parents or babysitters to apply the distraction. This characteristic is supported by the opinion of Cohen (2008) which states that distraction is effective to apply to <7 year-old children. Because toddlers are sensitive to their environment, providing them with knowledge and skills is a lot easier (Nurmalitasari, 2016).

Based on the results of this study, the majority of respondents are boys in either the control group or the intervention group. At the time of the research process, male respondents were given support and counsel by their parents that boys should be strong, not be whiny and be patient, while female respondents always want to be accompanied by their parents or family. This condition is supported by the results of research conducted by Lynch, Kashikar-Zuck, Goldschneider and Jones (2007) that boys have a higher tolerance for pain than girls do. Unlike Mathew (2003), however, the differences in sex are only due to the sensitivity, expression experience, and situational conditions that affect the children in response to pain. Lynch et al. (2007) mentions in his research that girls seek more social support in controlling their pain than boys do.

Children in the 1–5 year-old category respond faster to the stabbing pain that

The results of the analysis of the previous child’s experience explained that most of the respondents had undergone IV (intravenous) insertion at Dr. Hasan Sadikin Bandung

and other hospitals. Based on the parents' report, it is also known that the children have experiences in IV insertion when they were treated at another hospital. These experiences cause the children to be traumatized by the sight of the nurse and the syringe. This is supported by the opinion of Cohen (2008) that if the management of pain is not done well in the early childhood (golden age) then the pain felt by the children will last long so it can cause trauma and growth disorders and development of children permanently, including neurological development.

The gender of the parents or babysitters who accompanied the children was also discussed in this study. Based on the results of the study, most parents or babysitters who accompany their children when the IV insertion is implemented are the women, ie. their mother or grandmother. The reasons why mothers often accompany their children when the IV insertion is carried out are that the mothers are more skilled, accustomed and often care for their children at home. While the fathers more often work outdoors. However, researcher saw that the ability to distract the children is not limited to the mothers alone but can also be done by the fathers. This is evidenced from a case where the closeness of a child with his father is stronger than that of his mother, because his father is more humorous and calm.

When the IV insertion is implemented, parents or babysitters are advised to accompany their children so that children do not feel too strange to the surrounding environment. This is evidenced when the children are going through the IV insertion; the children often call on their mothers or fathers' name and have to hug their parents. This situation is supported by the Mercer theory in which the role of parents occurs because of the involvement of children, fathers, and mothers who affect each other (Alligood, 2014). However, Mother is a woman who in most families has a role of a health leader and caregiver. Mother acts as a primary source in providing comfort and assistance when the child is sick (Friedman, 2010). In line with the research conducted by Winarsih (2012), it is known that 81.1% of the children who are accompanied by their mothers showed better attitude than the

children who are accompanied by their father.

b. Level of Ability of Parents to Perform Distraction

The results showed that some parents or caregivers in the control group had sufficient levels of ability and some had poor levels of ability when they distracted their child at 2 minutes before the child was stabbed with a srynge up to 2 minutes after the IV insertion was completed. In the control group, parents accompany their children according to their habits. When the children were undergoin the IV insertion, the parents are just beside the children without distracting the child properly. Parents look confused, anxious, and sad and sometimes they avoid the situation even they get out of the room as their children are crying, screaming and thrashing because they feel the pain of the needle. They revealed that they did not know how to perform the correct and effective distraction to reduce pain in their children. According to Pillai Riddell et al. (2011) that parental involvement is an important factor in reducing pain in children when the medical procedures are performed. The results of this study also supported by the results of research conducted by McCarthy et al. (2010) that the level of distraction ability given by the mother is very influential on the pain response in children, it means that the higher the distraction level given by the parents, the lower the children's response to the pain when the IV (intravenous) insertion is applied. Therefore, when performing distraction in the children, the parents or babysitters should have characteristics which are appropriate to the characteristics of an effective distraction coach so that the distraction has the effect to reduce pain felt by the children.

In the intervention group, some parents or babysitters have good level of ability to perform distraction to their children before, during, and after the children undergo intravenous insertion. A decrease in the intensity of pain in children in the intervention group may be due to the ability of parents to distract their children. In this group, parents have been educated by researchers for 15 minutes using a video that shows how to distract children exactly when intravenous insertion is performed in children. Video

which was shown to the parents or babysitters contain interesting images accompanied by easy-to-understand language so that the parents or babysitters understand how to distract their children easily. This is supported by the results of research by Kapti, Rustina, and Widyatuti (2013) that audiovisual media is a more effective medium in improving mothers' knowledge and attitude in caring for their children. Besides instructional media, Edelman and Mandle (2010) also explain that the appropriate learning strategies to improve one's actions are to demonstrate and practice. When researcher provided education to parents or babysitters and showed the video about distraction, researcher did not involve their children. The goal is that the children will not feel manipulated at the time they undergo intravenous insertion. In contrast to the research conducted by Kleiber et al. (2001), he involves children when parents get education so that children become sensitive and feel manipulated.

Researcher also gave brochures (leaflets) to the parents or babysitters which were associated with the distractions where the goal is to improve their cognitive and social abilities that can help them to understand the information they have received more easily. The parents are advised to do what they have seen in the video. At the time of coaching, parents or babysitters looked very enthusiastic to know about distractions. This is evidenced by their positive questions about the distractions which will be applied on their children.

When researcher gave the education to parents, researcher had sorted out the educational background of the parents or babysitters into the category of higher education so that the information would be accepted and understood more easily by them. The majority of parents or babysitters' educational background is senior high school, but some of them have a Bachelor's or Diploma degree. According to Cutler and Leras-Muney (2006), in general, people with the higher education will have a better learning process because their cognitive skills have been acquired as they study in the school.

The experiences and information received by parents or babysitters greatly affect their

ability in performing distractions. Parents or babysitters who bring their children to the hospital for the first time really need more information about the procedures and routines of the hospital so they ask more questions and discussions than those who have more than once brought their children to hospital.

In the intervention group, when the parents or babysitters performed distraction, it was found that there was a difference between their focus at two minutes before the child underwent intravenous insertion (first phase) and when the child was being stuck with a needle (second phase). So, researcher got different scores of parental abilities in these two phases. It is because the parents' attention is greater in the pain experienced by their children and the needle implanted on their children so that the parents or babysitters do not focus on distraction.

c. The difference between mean value of pain intensity in children in control group and intervention group.

The results of statistical tests show that there is a difference between the mean value of pain intensity in children resulting from intravenous insertion accompanied by the parents' distractions (intervention group) and the mean value of pain intensity in children resulting from intravenous insertion which is not accompanied by parents' distractions where parents were only accompanying their children as their customs and routines (control groups). The results of this study are in line with the results of research conducted by Sarimin (2012) which shows that the pain felt by the children is reduced when the support of parents or families who have received education and information through brochures are applied to their children. Moreover, the results of the research by McCarthy et al. (2010) show that the mother's distraction ability is very influential to the child's response. It means that the higher the distraction level, the lower the children's pain response to intravenous insertion.

The intensity of pain in children decreases when distraction is performed by parents by using animal piano toys and animated films at 10 minutes before IV (intravenous) insertion is applied so that children are neglected with

what they like. Parental distraction coaching is done by combining the senses of sight, hearing and touch like playing with parents accompanied by pleasant words from parents. This will lead to perceptions, pleasant situations and beliefs. Parents or babysitters are part of the family members most trusted by children. Parents are also more patient and understand what children like and want. They are more comfortable when they are invited to play and watch movies with their parents so that the piercing pain stimulus performed on the children can be diverted. It is supported by the opinion of Cohen (2008) which states that, in theory, distraction is more optimal if it involves several modalities such as seeing, listening and touch. In addition, distractions should be given before, during, and after medical procedures are applied.

The results of this study are also supported by the Gate Control theory which states that stimulation of painless nerve fibers such as trust, playful games, and attention can make beta-A neurons release and transmit inhibitor cells (neurotransmitter inhibitors) such as eukafalin and endorphin which serves to regulate the process of defense and inhibition of pain transmission by closing the defense system at the dorsal door of the spinal cord. When the defense door is closed, the pain impulse due to tissue damage is suppressed and not delivered to the brain, while pleasant descending nerve impulses are transmitted to the brain. The impulse coming from the brain affects the ascending pain signal from the damaged tissue so that the perceived pain will decrease (Smeltzer & Bare, 2004; Cohen, 2008). This is supported by the opinion of Cohen (2008) which states that distraction will change the response of nociceptors by activating the internal system of the frontal cortex which can suppress the pain impulse to the brain. According to Olesen, Macoveanu, Tegnér, and Klingberg (2007), the frontal cortex has greater effect on distraction to reduce pain than the parietal cortex has, which is activated when distraction is performed in adults. Children have lower working memory and poorer ability to suppress distraction devices; therefore, distractions are very effective to be applied to children.

The selection of game types used by parents when performing distractions refers

to the results of the study of the research literature where the type of distraction that can be used in ≤ 3 years old children is a game that has the sounds in which the game must be accompanied by pleasant words from the parents. This is applied because children at that age are more easily stimulated by striking colors and loud noises. Unlike children aged ≥ 4 years, they are able to recognize and understand game tools that use computer screens or mobile phones such as cartoons or animations (Ball, 2008; Bowden, 2010; Taddio et al., 2010). In accordance with the results of research conducted by James et al. (2012), children aged 3–6 years who were given distraction by watching animated cartoons showed that they experienced less pain when they underwent blood sampling through their veins. This is evident from their behavioral responses. According to Brannon et al. (2013), when children focus more on watching cartoons, pain impulses from injury do not flow through the spine and messages do not reach the brain so the child does not feel pain.

The benefits of distraction are more effectively felt by children when the distraction is done by their parents because the children have a very strong inner relationship with their parents or babysitters. Children trust their parents or babysitters more than others so parents or babysitters can give distractions more easily. Distractions by parents or babysitters can be attributed to theoretical concepts put forward by Kathryn E. Barnard, the Parents Child Interaction (PCI) theory, where the main focus of this theory is the interaction system between parents and children. When parents give distractions, parents are also very sensitive to the needs and cues of their children even though their children are undergoing intravenous insertion. This can be seen from the actions of parents such as responding to children's questions, breastfeeding the children if the needle insertion has not been successful, replace diapers when it was full, and give positive words to the child. Based on these circumstances, the relationship between Parent Distraction Coaching and Parents Child Interaction is when parents give full attention, show patience, and make children feel comfortable. As a result,

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children's attention can be distracted more easily so that the intensity of pain they feel is reduced. Looking at the results of studies which are demonstrating the effectiveness of parental distraction coaching, the researcher states that parents have a very important role in reducing pain in children when the IV (intravenous) insertion is applied to their children.

The results of this study are also supported by a study conducted by Sarimin (2012) which explains that there is a difference between the mean value of the intensity of pain in children who are immunized with the support of family or parents and the average value of the intensity of pain in children who are immunized without the support of family or parents. This study, however, is not in accordance with the research by McCarthy et al. (2010) which states that there is no significant difference between the intensity of pain in children who are distracted by their parents and the intensity of pain in children who are not distracted by their parents, but the distraction given by parents is very influential on the distress response of chronically ill children when the intravenous insertion is applied. This may be influenced by topical analgesics given to the children before the intravenous insertion was conducted, so the pain of needle syringe is lower for most children.

Other studies of distractions performed in chronically ill children when the venipuncture procedure was applied were also conducted by Windich-Biermeier, Sjoberg, Dale, Eshelman, and Guzzetta (2007). The results showed that distraction had no significant effect on pain in children during venipuncture, but distraction had a significant effect on the distress experienced by the children. Pain felt by the children is also affected by a topical anesthetic of EMLA given prior to intravenous insertion.

Researchers conclude that parent distraction coaching is done by diverting children's attention to something the child loves, giving words that please children and touching children can reduce the intensity of pain in children. In addition, this activity can minimize separation between child and parent or family, can meet children's play needs, and can reduce trauma in children.

This is consistent with the philosophy of family centered care and traumatic care, such as respecting the integrity of the family, encouraging parent involvement in childcare, preventing and minimizing separation between children and parents or their families and fostering relationships between family, patients and nurses, and prevent pain and bodily injury.

Conclusion

Based on the results of this study, the researcher concludes that the mean value of the intensity of pain experienced by the children in the control group when intravenous insertion was applied was 7.12 (categorized in the severe pain), while the average value of pain intensity experienced by the children in the intervention group when intravenous insertion was applied was 5.47 (categorized in the moderate pain). So it can be concluded that there is a significant difference between the intensity of pain experienced by the children when intravenous insertion is applied with parents' distraction after the parents were given the coaching and the intensity of pain experienced by the children when intravenous insertion is applied without parent's distraction where the parents only accompany their children according to hospital routine (p value <0.05). Expected to nurse can involve parents/families to accompany the child while insertion intravenous (IV) and conduct education on parents/families through a video about distraction.

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Relationship between Age, Gender, and Peer Group with Reproductive Healthy Behavior of Teen

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Abstract

Adolescent reproductive health (KRR) in Indonesia is still poor. The KRR known as Triad KRR consisted of sexuality, HIV / AIDS, and drugs become a national problem. Teenagers were more comfortable talking about their KRR with their friends than their parents or teachers. The purpose of this research was to know the relation of age, gender, and peer group with behavior of adolescent reproductive health. The research method was cross sectional study design. Data were analyzed using descriptive statistic, Chi-square and binary logistic. Research conducted in 2017 in junior and high school district Bandung. The population of this study was all students of SMP and SMA amounted to 12,000. The samples amounted 668 students. The results of the research showed that there was a significant relationship between gender with behavior ($p = 0,006$), there was a significant relationship between age and behavior ($p = 0,031$), and there was a significant relationship between peer group and behavior ($p = 0,042$). Multivariate analysis found that age had opportunity 0,527 times, peer group had opportunity 0,211 times, and gender 2,208 times on the behavior support of Triad KRR. The results concluded that KRR behavior is influenced by age, sex, and peer group. Based on the results of the study suggested for the provision of education using a method that involves peer group by considering the age and gender in improving knowledge, adequate and sustainable behavior especially about adolescent reproductive health.

Keywords: Age, behavior, gender, peer group.

Introduction

Bandung regency is one part of metropolitan development area in Indonesia, has very high Population Growth Rate (LPP) reaching 2.56% per year mostly caused by migration to this region to look for work (Bandung Regency Government, 2013). This condition causes the vulnerability to behave freely in his teenage lifestyle. In the study of Suryoputro et al. (2006) mentioned that Indonesian adolescents were currently experiencing rapid social change from traditional society to modern society due to urbanization and industrialization, changing their norms, values, and lifestyles due to rapid urbanization and industrialization. This has resulted in increased vulnerability of children and adolescents to various diseases and threats, especially those related to adolescent reproductive health, such as drug use, free sex where both deviant behaviors cause adolescents at high risk of contracting HIV/AIDS.

Reproductive health is very important because it is closely related to the quality of human life in the future which is very decisive for the future of human life. According to BKKBN (2006), reproductive health is a condition free from unwanted pregnancies, unsafe abortion, sexually transmitted diseases (STDs), HIV/AIDS, and free from all forms of sexual harassment and violence. Teens reproductive health is a healthy condition concerning the reproductive system (functions, components and processes) that teens possess both physically, mentally, and socially. Adolescent behavior that supports reproductive health is expected to be able to maintain reproductive health so as to enter the period of family life with healthy reproduction. Unfortunately there are still many problems of reproductive health in adolescents today.

Adolescent problems occur, because teenagers were not prepared for the knowledge they need to have about aspects relating to the transition from childhood to adulthood (Azza, 2016). Inadequate knowledge and misinformation on adolescent reproductive health may affect risky behavior in adolescents known as the three primary threats to adolescent reproductive health or

the Triad of Reproductive Health (TRIAD KRR), including sexuality (sexual violence, unmarried pregnancy, early marriage, free sex), HIV/AIDS, and drugs (BKKBN, 2006). This is supported by the Lestary and Sugiharti (2011) studies that knowledge is one of the factors related to risk behavior in adolescents in Indonesia.

Unhealthy sexual behavior among unmarried adolescents tends to increase. Some research results shown that adolescents aged 15-24 years have had pre-marital sexual intercourse 1% in women and 6% in men, dating experience in Indonesia tends to be more daring and open like holding hands (men 69% and women 68.3%, kissing (male 41.2% and female 29.3%, fingering (male 26.5% and female 9.1%) (SKRRI, 2007) Research conducted by various institutions in Indonesia found that 5-10% of women and 18-38% of men aged 16-24 years had premarital sexual intercourse with partners of their age (Hatmadji 1993; Ford, 1997). The issue of reproductive health in adolescents is the desire to know the problem in connection with reproduction, especially sexual problems and NAFZA even wanted to try it.

Another problem that threatens teens is drug abuse. Based on data from the National Narcotics Agency in 2008, shown the number of drug users until the year 2008 was 115,404, of which 51,986 of them were aged 16-24 years, among them was adolescent school students amounted to 5.484. Kasus drug in Bandung regency in 2010 recorded 63 cases with number of suspects 91 people (www.bandungkab.go.id).

HIV/AIDS is also a prominent issue in adolescents. The number of new AIDS cases in the period of January-September 2011 was 1805. Cumulative AIDS cases up to June 2011 amounted to 26,483 cases, 45.9% (Kemenkes RI, 2012). The data is an iceberg phenomenon (only those reported only). New AIDS symptoms appear after 3-10 years of infection, so it is likely that most of those affected by AIDS have been infected at a younger age. The number of HIV/AIDS patients in Bandung regency until the end of 2013 was recorded 106 people (www.bandungkab.go.id).

For health and safety, children need to be equipped with knowledge about the dangers

of drugs, so they can live healthy from both physical and mental. Precise preventive measures against drug use are important in informing teenagers, given that Indonesia is now in a “Drug emergency” situation. With the increasing number of troubled adolescents, it will disrupt the achievement of individual adolescent growth and development tasks (physical growth, mental development, emotionally and spiritually and the task of social growth and development (BKKBN, 2012).

According to Interview with Promkes UPTD Puskesmas Dayeuhkolot Regency Bandung obtained that there is no incidence rate data about the disease in KRR adolescent due to the teenagers was keep closed during interview about KRR. The data from teachers at school was found that the UKS program was not working, so that it did not have the human resources responsible for the implementation of the UKS, almost all schools had no school health cadres, no training on school health cadres, BK teacher training on KRR and PIK-R ever done . For regular HIV and drug abuse conducted every 3 months by the police team, while reproductive health education was conducted in December 2016 by a team from Jakarta joint nurses and doctors. According to data from BKKBN Kabupaten Bandung, schools in 31 sub-districts of Bandung Regency have several programs to improve KRR behavior, such as GenRe, BKR, PIK-R. The PIK-R driver in the school is the BK teacher and the counselor is the principal or teacher. Teenage health cadres are voluntary no special responsibility. According to students who attend school in Bandung regency, PIK-R survives 2 years and no one goes on, there has never been any special socialization activities on adolescent reproductive health from schools, UKS has no administrators and programs, UKS is only a place where students are sick only. For the KRR problem in his school there was once 1 person using drugs but had been expelled from school, and there were also 2 female students who were pregnant out of wedlock.

The existence of adolescents is an asset of the nation that should be noticed by the government and society in a system so that they can optimize the task of development in

accordance with the stages of his age. Looking at the very large number, then children and adolescents as the next generation of the nation needs to be prepared to be a healthy man physically, mental and spiritual. But in fact, studies shown that adolescents have a very complex problem with the transition period experienced by adolescents. The need for prevention of their KRR problems in the form of educational strengthening. In addition, not only strengthening in the field of education for children and adolescents, but also another important thing is their own support (peer group support), so that among them complement each other, remind and support to improve reproductive health of children and adolescents. According to Green and Kreuter (2005) said that the cause of behavior of one of them was peers. Behavior can also be affected by age and gender. Mahmudah Research (2016) showed that the sexual behavior of high school adolescents in the city of Padang was influenced by sex. Mesra and Fauziah (2015) research on high school adolescents in Tangerang gender related premises sexual behavior. Research Solehati (2017) found that age had a relationship with the behavior of adolescent girls in boarding school in Garut.

In adolescence if it seen from the development of activities, school-aged children are beginning to move away from family groups and focus more on relationships with their wider peers and prioritizing social cooperation (Wong, Hockenberry, Wilson, Winkelstein, & Schwartz, 2009). Teenagers feel comfortable when discussing or sharing secrets with their peers rather than to parents, they rely on their support and intimacy to their peers. In adolescence, peer group is a very influential factor in adolescent life which provides a sense of belonging and provides opportunities for learning behaviors that they can accept (Wills, 1999; Potter & Perry, 2005). In a peer group, a person will feel the same good age / needs / goals, a sense of responsibility for the success and failure of his group, interact and provide the spirit and motivation of other peers emotionally, can find himself personally and can develop a sense social in line with the development of his personality. Research Grace (2013)

to junior high school students in Makassar showed that there was a relationship between peer group interactions with behavioral changes. Pramono's research (2011) in high school students in Samarinda showed that peers influence sexual behavior in adolescents. The Tome (2012) study of 6th, 8th and 10th grade children in Europe showed that peers influence both good behavior and bad behavior.

Peer Group Support is defined as emotional social support, instrumental support, and sharing in any condition to bring about desired social or personal change (Solomon, 2004). Peer Group Support has a function as companionship, positive stimulation, psysical support, ego support, and intimacy / affection (Dariyo, 2004). The more trust and openness with others is one of the characteristics of the Peer Support Group. Another feature is that there is a joint responsibility effort and there is communication that allows to express their needs to each other without threats or coercion, assuming full reciprocity, assuming systemic evolution as opposed to individual recovery of the problem, requiring people to rethink the meaning of salvation (Mead & MacNeil, 2005). In Peer Group Support, there are 3 supporting aspects: emotional support, instrumental support, and information support (Solomon, 2004). Peer Group Support has proven successful in improving behavior for the better. In his research Zahroh (2015) states that Peer Group Support has a very important role for the development of adolescents both emotionally and socially. Some studies suggest that Peer Group Support has an important effect on adolescent behavior (Tome, 2012; You, 2011; Albert, 2013; Crosnoe, 2008; Tome, 2012). Delisle (2016) in his review literature states that peer facilitators play an important role in determining the success of many support groups. These studies only reveal the influence of peer groups on behavior in general, does not reveal how the influence of peer group on behavior of adolescent reproductive health.

Therefore, based on problems that occur about adolescent reproductive health in Bandung Regency and previous research hence required analysis to reveal relationship

of age, gender, peer support group (peer support group) with behavior of KRR.

Method

In this study, quantitative research design was used with cross sectional design to analyze the peer group relationship with KRR behavior. The study was conducted in Kabupaten Bandung, namely SMP 1 Banjaran, SMP 1 Dayeuhkolot, SMP 1 Cileunyi, SMA Dayeuhkolot, and Cileunyi High School from July to December 2017. This location was selected because based on the study by the teams with local government on behavior less supportive of adolescent reproductive health in the area that causes child and adolescent reproductive health problems is quite high. In addition, the high risk of children and adolescents experiencing reproductive health problems due to the high migration to this region and its status as a development area of Bandung metropolitan. The total population of all junior high school and high school students was 12.000, with Slovin formula obtained sample of 668 students. Sampling technique with stratified random sampling. This study has obtained research permission from National Unity and Politics Agency 070/1250 / Bakesbangpol, all participants in this study were given informed consent to homeroom teacher and parents before data collection was started and willing to participate in this research. The data collection was done by filling the demographic data instruments of age and sex, as well as questionnaires about the behavior of Triad KRR (sexual, drugs, HIV / AIDS) and peer group using Likert scale. In the process of filling questionnaires assisted by field data collectors a number of 4 people S1 Nursing who have done apersepsi first. Data were analyzed by using descriptive statistical analysis, Chi square, and multiple logistic regression. Descriptive statistical analysis in the form of frequency and percentage was used to see the description of age, gender, behavior, and peer group. Chi square analysis and multiple logistic regression were used to analyze the relationship of age, sex, and peer group to KRR behavior using.

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Result

The results of this study explained the characteristics of respondents, as well as the relationship between age, sex, and peer group. For more details, the data seen in Table 1 and Table 2 below.

From Table 1, it showed that the average age of students was 14.55 years (SD = 1.68). More than half of the women were 57.6%. Almost all of them behaved in support of 92.4%. Almost all students had a strong peer group of 97.5%.

Table 1 Frequency Distribution Characteristics of Age, Gender, Behavior, and Peer Group Students (n = 668)

Variable	f	%
Age (year)	M □ SD = 14,55 □ 1,68	
10–14	335	50.1
15–19	333	49.9
Gender		
Female	385	57.6
Male	283	42.4
Behavior		
Does not Support	51	7.6
Support	617	92.4
Peer Group		
Strong	651	97.5
Weak	17	2.5

Table 2 Relationship of Age, Gender, and Peer Group with KRR Behavior On Students of Year 2017 (N = 668).

Variable	Behavior of Triad KRR		χ ²	p
	Does not support	Support		
Gender*				
Female	20	365	7.672	0.006
Male	31	252		
Age*				
10-14	33	302	4.680	0.031
15-19	18	315		
Peer Group*				
Strong	47	604	4.151	0.042
Weak	4	13		

Table 3 Result Of Logistic Regression Test

Variabel	B	S.E.	Wald	Df	Sig (p)	Exp (B)	95% C.I.for EXP(B)	
							Lower	Upper
Age	-.640	.309	4.293	1	.038	.527	.288	.966
Peer Group	-1.554	.615	6.395	1	.011	.211	.063	.705
Gender	.792	.302	6.887	1	.009	2.208	1.222	3.991
Constant	-1.926	.765	6.333	1	.012	.146		

Table 2 showed that there was a relation between gender and behavior ($p = 0.006$), there was correlation between age with behavior ($p = 0.031$), and relationship between peer group and behavior ($p = 0.042$).

Based on the above Table, it was found that the age of opportunity 0,527 times to behave in favor of KRR means that the age group of 15–19 year has a bigger chance to support KRR, peer group has 0.211 chance to support KRR means the stronger peer group support KRR, and gender 2.208 times behave supporting KRR means women have a bigger chance to support KRR. The regression equation formed from the logistic regression analysis is: $\text{Ln}(\text{behavior}) = -1.926 - .640 \text{ age} - 1.926 \text{ peer group} + 1.554 \text{ sex} + e$.

Discussion

The results showed that the average age of students was 14.55 years ($SD = 1.68$), more than half of female respondents were 385 (57.6), almost all respondents had a behavior of supporting the KRR of 666 (99.7 %) and almost all respondents have a strong peer group of 651 (97.5%).

In the adolescent KRR behavioral variable found that it was in the cathagoric of support. This is possible because there are several factors that influence the behavior of the adolescent, such as the existence of religious activities before the lesson begins, led by the head of the class and their teachers. In addition the teachers are also quite hard in applying the discipline to their students in matters relating to the opposite sex. The existence of rules about what is allowed and something that is prohibited by parents at home and teachers in schools that menyebabkan them have attitudes and behaviors such support. The results of Anesia (2013) indicated that parental control has a relationship with premarital sexual behavior. This shows that the parental controls influence the behavior of adolescent KRR. In addition, the possibility of the influence of norms and religion in Bandung regency that prohibits teenagers to get along freely and mengggap sexual is something sacred. According to Anindani (2015), people's lives were full of Eastern life values dominated by religious and cultural teachings that govern

one's life, including one's sexual behavior.

Teen age is an age in critical times where the curiosity is very high, but they feel awkward to ask parents and teachers. This is because it is still less open the parents and teachers to explain about KRR in detail due to the culture tabu. Finally any age seek the information they need through media such as the internet. The higher the age then the more able to analyze the information they get because usually the increasing age of teenagers increasing their formal education from junior high to higher levels such as high school or vocational school (Putra, 2017). The information they gain has an impact on their knowledge and behavior. Therefore, in this study found an association between age and behavior KRR. In the multivariate analysis, it was found that the probability of 0,527 times behaved in favor of KRR. In the study of Son (2017) found that age affects the adolescent in sexual behavior. The results of this study contrasted with research Putri (2014) which concluded that age is not related to behavior.

Similarly, gender was found to have a relationship between sex and behavior. Fisher et al. (2012) results show that male-owned sexual cognitions are larger than females so that adolescent boys are more likely to think about sexual things than women. Culture also plays a protective role between adolescent girls and men where our country places women to always behave more cautiously than boys. This happens because of the assumption that women will bear the consequences if they behave so that women are forced to be more cautious (Tukiran, 2010). Young women are always warned by their parents to be able to take care of themselves compared to male teenagers. According Sarwono (2006) norms that apply to men more loose than the women so that men have an opportunity to perform sex behavior than women. In the multivariate analysis it was found that sex had a chance 2,208 times to behave in favor of KRR, where women had a chance 2,208 times to behave in favor of the KRR. The results of the study were in accordance with Mahmudah (2016) in his study of 158 high school students in Padang City who found that sexual behavior was higher risk in male gender (37.7%) than female (10.3%), to not support free sexual behavior and tend to support KRR

behavior. This is in line with Lisnawati's (2015) research on adolescent SMKN in Cirebon that shows the relationship between sex and teenage sexual behavior. The results contrasted with the Apriluana (2016) in his study concluded that there was no significant relationship between sex and behavior.

The teenagers are more comfortable to discuss with their peers even though it may be equally insufficient knowledge of his KRR. This can be seen from the result that the teenagers support peer group behavior. The results showed that peer group has 0.211 chance to behave in favor of KRR where the stronger the peer group the more supportive KRR. According to Albert (2011), During adolescence, teenagers spend a lot of time with their peers. Peer groups for teenagers have an important role to play in the development of their personalities, one of which was to develop their self-identity and develop interpersonal communication skills in association with their peer group (Septiyuni, 2015). They will communicate something in the group. In addition, the language used in peers was more easily understood by them because in this group of peers there was no reluctance, low self-esteem, shame, and so forth (Desmita, 2009).

In further analysis it was found that there was a relationship between peer group and student KRR behavior. Anindani's research (2015) on the 233 students at SMP Negeri 209 Jakarta proves that there is a positive and significant relationship between peer group and adolescent behavior in dating. The influence of peer groups in adolescents looks so strong because in adolescence they are closer to peers than others. Research Budiarti (2016) on 336 high school students in Jakarta concluded that peers through their interactions have a strong influence in supporting behavior. Research Grace (2013) to junior high school students in Makassar and Pramono (2011) research on high school students in Samarinda showed that peers influence the behavior of adolescents. In Nurhidayah et al. (2012) study on 184 adolescents in Bekasi City concluded that peer group positively affect the behavior teen sex. In multivariate analysis it was found that peer group had 0.211 chance to behave in favor of KRR.

Based on the research result, where age, gender, and peer group can influence adolescent behavior, it was necessary to develop educational methods to change behavior through peer group approach by taking into account the characteristics of age, sex, and peer group. Thus, UKS and PIK-R that have not been running can be reinvigorated by engaging BKS Teacher or Guru UKS. Teenagers can be empowered through health cadres to revive KRR through a peer group approach that is scheduled to continue. So this KRR program comes from them and for them, once they get adequate information from their health teams and teachers. The learning model of KRR through peer group systematically arranged by taking into account the potential awareness of the potential of teenagers in improving their reproductive health status (Azza, 2016).

Conclusion

Based on the research results can be concluded that there is a relationship between age, sex, and peer group with KRR behavior. To improve the behavior of adolescents, it is suggested that each educational use using methods involving peer group with attention to the characteristics of age and gender eg with peer group teaching, learning method with zigshaw technique, or role play.

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Comparison of Mirror and Video Methods in Increasing Caregiver Knowledge in Treating Clients Halusinasi

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Abstract

Efforts to improve caregiver's knowledge on hallucination is by providing an education the caregivers. Enhancing such knowledge can be carried out by different methods, include lecture and watching video methods. The purpose of the present research was to compare the effectiveness of lecture and watching video method in enhancing caregiver's knowledge on hallucination. The research used a quasi-experiment method with a pretest and posttest group design, with the research sample was 60. The sampling technique used was a total sampling. The scores of caregiver's knowledge were determined by a questionnaire of knowledge on hallucination that was self-developed by validity test (0.707) and reliability test (0.968). The data obtained was then tested by using Independent Sample T-test, Mann-Whitney test, and Wilcoxon test. The result of pretest of caregiver's knowledge before the intervention showed that there was no difference between intervention and control group (p-value=0.624), while result of posttest of caregiver's knowledge after the intervention showed that there was a significant difference between lecture group and video group (p-value=0.000). The research findings revealed that there was a significant increase in the scores of knowledge for both methods (p-value=0.000), but the increase of video group's knowledge score was higher (4.23) than that of lecture group (2.57). The conclusion of the research was that watching video method was more effective than lecture method in enhancing caregiver's knowledge so that video can be used as an alternative method for mental health education.

Keywords: Caregiver, hallucination, lecture method, video method, knowledge.

Introduction

The problem of mental disorders is a health problem that must be dealt with seriously, especially in a community that is still unfamiliar with mental disorders and has a low economic income. Maramis (2014) suggested that social relations and worsening economic problems and high workloads could be a trigger for mental disorders. Mental disorders are defined as mental states that are not related to reality (Stuart, 2016). Data from the World Health Organization (WHO) in 2016 obtained data as many as twenty-one million people in the world affected by schizophrenia and needed immediate treatment to find a solution to this problem by mental health experts in particular (Ministry of Health RI, 2016).

In Indonesia, the results of Basic Health Research (Riskesdas) in 2013 showed that the prevalence of severe mental disorders was 1.7 per 1,000 population. Of the mental disorder clients, 14.3% or about 57,000 people have been or are being put in a supply. The figure of rural income is 18.2%. This figure is higher than the figure in urban areas, which is 10.7%. It can be concluded that there is more happening in rural areas (Mboi, 2016).

Patients with mild to severe mental disorders in West Java currently reach 465,975 people. This number increased significantly from 2012 with 296,943. This indicates that people with mental disorders in West Java rose by 63%. Trends in mental disorders are expected to increase every year (Pitaloka, 2016).

Schizophrenia is a mental disorder that is categorized as the most serious psychic disorder because it can cause a decline in human function in carrying out daily life activities (Jaste & Mueser, 2008). Mental disorders are complex neurobiological brain diseases that affect a person's ability to understand and process information (Stuart, 2016). Schizophrenia clients also experience a decrease in independence in self-care, social functions, so they need family help (Kartikasari, 2017).

Stuart and Laraja (2013) stated that as many as 20% of clients with schizophrenia experience auditory and visual hallucinations simultaneously, 70% experience auditory

hallucinations, 20% experience visual hallucinations, and 10% experience other hallucinations. Based on these data it is known that the type of hallucination most clients suffer from schizophrenia is auditory hallucinations. In the schizophrenic client hallucinations are more than 60% the most dominant influencing it (Syriac, 2018).

Sulistiowati (2010) suggested that the participation of family members in the handling of client hallucinations becomes important, where the hallucination client begins the first interpersonal relationship in his environment is his own family. It is expected that families can help clients hallucinate in learning to develop the values, beliefs, attitudes and behavior of clients, so that clients will be ready to play a role in the community after hospitalization.

Suryani (2013) suggested that mental disorder is a journey of challenge or a challenging journey. Clients find it difficult to recover right away and need a long process of healing. So it needs continuous assistance from the caregiver until the client is truly independent. Caregiver is an individual who generally caring for and supporting clients of hallucinations in carrying out their daily activities which have a lot of time used to interact with hallucination clients (Awad & Voruganti, 2008). When the client is at home the support of the caregiver, family and the surrounding environment is needed so that the client can undergo a recovery or recovery process.

Metkono (2014) suggested that in caring for family members with hallucinations can cause a burden for the caregiver. The burden can be an objective burden and subjective burden. The caregiver's burden can reduce the caregiver's ability to care for clients. The condition of the client who is relapsed will heighten the perceived burden. The inability of the caregiver to treat can cause bad behavior. This is due to the lack of caregiver's knowledge in caring for clients in his home.

Health problems suffered by one family member can cause stress for other family members, especially the primary caregiver. For that, caregiver needs to master coping skills to overcome the burden experienced in carrying out its role. Among the various aspects that play a role in achieving an

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effective coping for the caregiver is the need for good and correct knowledge and information. That is, the schizophrenia caregiver needs to have sufficient information about the schizophrenia disorder itself and to know what burden is borne by the patient's family and how to overcome it (Jusuf, 2014). It is expected that with sufficient caregiver knowledge, it can be used as the initial foundation for the formation of changes in the attitude and behavior of the caregiver itself in caring for the hallucinatory clients (Sunaryo, 2004).

Efforts to improve the caregiver's knowledge in caring for hallucination clients are by providing health education to the caregiver itself, so that there is a significant change in knowledge, attitudes and skills of the caregiver in caring for hallucinative clients at home. Health education is a person's learning experience and what action plans will be taken to care for themselves individually or jointly, or act as decision makers to care for the health of others and their environment (Keliat, 2002). Farkhah's research (2017) the quality of caregiver's life is the most dominant factor in the recovery of schizophrenia clients. The lecture method is an educational method that has long been used to convey ideas, ideas, and new information to the desired target. The drawback of the lecture method is that the delivery is only one direction, boring, material that is too long is difficult to understand and students are more passive (Setiawati, 2008).

Research on the effectiveness of methods to improve family knowledge has been carried out on client caregivers with various diseases. Research conducted on 350 adult women in Odogbolu (intervened) and Ikenne (as controls) in the Nigeria Ogun area, showed that health education using film media was effective in creating awareness and increasing adult women's knowledge and

perceptions of cervical cancer and screening (Abiodun, 2014) According to Arsyad (2007) explained that video film is one of the media for educational purposes. Video playback can describe objects or processes correctly, teaching skills that can be presented repeatedly.

This research was carried out in Jatibarang Health Center, because in Puskesmas this was the highest case in the Indramayu region. Based on the recap of the soul case data of the community in Indramayu there are 236 cases of mental disorders in the Jatibarang Health Center (Indramayu District Health Office, 2014). Jatibarang Public Health Center once conducted mental health education with the lecture method in 2014, but the evaluation shows that there has not been much help for the caregiver in increasing knowledge in caring for clients in his home, this is because health education is only using lecture methods, so researchers are interested in comparison of mental health education methods using lecture methods and video methods to improve caregiver's knowledge about how to care for hallucinatory clients in the Jatibarang Community Health Center work area.

Method

This type of research is a quantitative quasi-experimental study with a design of two group pretest-posttest design. The design of this study involved two groups of respondents. Each respondent group consists of 30 people. The selection of the respondent group was done randomly before being intervened, with a draw or shuffle of the respondent's name.

Result

Table 1 Overview of Respondent Characteristics

No	Characteristics of Respondents	Lecture (n=30)		Video (n=30)		Result P Value
		Frequency	(%)	Frequency	(%)	
1	Gender					
	Male	10	33.3	13	43.3	0.595
	Female	20	66.7	17	56.7	
2	Age					

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	Early adults (18–44 year)	13	43.4	6	20	0.111
	Middle Adult (45–59 year)	10	33.3	17	56.7	
	Elderly (60–74 year)	7	23.3	7	23.3	
3	Education					
	Unschool	3	10	6	20	0.698
	Based school / equivalent	8	26.7	5	16.7	
	Junior high school / equivalent	7	23.3	5	16.7	
	Senior High school / equivalent	10	33.3	12	40	
	University / equivalent	2	6.7	2	6.7	
4	Related Status with Client					
	Mother	14	46.7	12	40	0.417
	Father	4	13.3	8	26.7	
	Womb brother	7	23.3	8	26.7	
	Unwomb brother	5	16.7	2	6.7	
5	Working Status					
	Work	19	63.3	18	60	1.000
	No Work	11	36.3	12	40	
6	Client care duration					
	< 1 Year	2	6.7	3	10	0.865
	1–3 Year	6	20	5	16.7	
	> 3 Year	22	73.3	22	73.3	

Table 2 Results of Average Caregiver Knowledge Before Given Interventions

Measuring	Group				Result p Value
	Lecture		Video		
	Mean	SD	Mean	SD	
Knowledge Pre test (0–12)	7.73	1.258	7.57	1.357	0.624

Table 3 Results of Average Caregiver Knowledge After Given Interventions

Measuring	Group				Result p Value
	Lecture		Video		
	Mean	SD	Mean	SD	
Knowledge Post test (0–12)	10.30	1.512	11.80	0.407	0.000

Table 4 Results of Average Caregiver Knowledge between Before and After Given Interventions in Lecture and Video Groups

Group	Mean	SD	N	Result P value
Lecture				
Pre test (0–12)	7.73	1.258	30	0.000
Post test (0–12)	10.30	1.512	30	

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Video				
Pre test (0-12)	7.57	1.357	30	0.000
Post test (0-12)	11.80	0.407	30	

Based on Table 1 above, it is known that most of the respondents in the gender group of female respondents were 20 people (66.7%) and in the video group of women were 17 people (56%), while the age of respondents in the lecture group was dominant Adult (18-44 years old)) as many as 13 people (43.4%) and the dominant video group Mid (45-59 years) as many as 17 people (56.7%). The education of the dominant lecture group respondents is SMA / equivalent as many as 10 respondents (33.3%) and the dominant video group is also dominant in SMA / equivalent as many as 12 people (40%).

Based on Table 2 above, it is known that the average knowledge of Pre Test Caregiver in the lecture group is 7.73, while the average knowledge of Pre Test Caregiver in the video group is 7.57. The results of the analysis using Independent T test obtained p value = 0.624 > 0.05, meaning that there was no difference in Pre test caregiver knowledge between the lecture group and the video group.

Based on Table 3 above it is known that the average post test Caregiver knowledge in the lecture group is 10.30, while the average Caregiver post test knowledge in the video group is 11.80. The results of the analysis using the Mann-Whitney test obtained p value = 0.000 < 0.05, meaning that there were significant differences in Post test caregiver knowledge between the lecture group and the video group.

Based on table 4 above, it is known that the average knowledge of pre test caregiver in the lecture group was 7.73, while the post test caregiver knowledge rose to 10.30. In the video group the average knowledge of the pre test caregiver was 7.57, rising to 11.80. The results of the analysis using the Wilcoxon test obtained a value of 0.000 < 0.05, meaning that there were significant differences between the knowledge of the pre test caregiver and the post test caregiver knowledge of both the lecture group and the video group. But the increase in video group knowledge is higher than the increase in knowledge in the lecture group. This shows that the video method

has a higher effectiveness than lectures in improving the caregiver's knowledge in caring for hallucinatory clients.

The material in the lecture was delivered by health educators in a language that was easily understood by the respondents, as well as the presence of two-way communication between health educators and questions from respondents making respondents more understanding of the material presented by the instructor. According to Wawan and Dewi (2010) factors that influence a person's level of knowledge come from the information he receives, with more information sources, one of which comes from health workers will increase wider knowledge.

The lecture method is an oral presentation of information. The advantage in the lecture method is that health educators can easily master and organize participants (audience), help the audience to listen accurately and critically, and if used correctly it will be able to stimulate and increase the audience's desire to behave in accordance with health education goals (Djamarah, 2007). Lecture is basically a direct communication between health educators and audiences. The health education process is a basis for transferring messages to be delivered by instructors to the target. Understanding gained by the audience will be in accordance with the target if the target of getting health education correctly, and of course as an instructor must have a deep understanding of the process of information dissemination, behavior change, to the process of social transformation (Nursalam & Ferry, 2009).

These results are appropriate when related to the theory of Notoadmodjo (2007) explaining that health promotion strives for the behavior of individuals, groups or communities to have a positive influence on the maintenance and improvement of health. Williams (2010) said health education provides objective evidence for the development of a comprehensive health implementation program in maintaining one's health. Fidelis's (2013) study of the trust

and attitudes of leprosy patients in hospitals concluded that there was a relationship between patient trust in how to trust patients' attitudes in receiving leprosy care by health workers.

Before being given health education using video many caregivers who have less knowledge after being given health education using increased knowledge of caregiver knowledge to be well-informed. This is because the video used in the delivery of mental health education materials can attract the attention of caregivers. Notoadmodjo (2007) explained that in the process of health education besides being influenced by teaching materials and learning facilities, the use of health education methods and tools will influence the results desired by the teacher. The implementation of health education with a more effective video playback method can be because the video method has the advantage of being able to display an object or event as it really is. Video increases memory retention because it is more interesting and easy to remember (Sardiman, 2012).

Muhdhar (2012) mentions in his research that the provision of health education with video can improve the understanding of respondents. In line with Rani's research (2013) his research using video media obtained an increase in knowledge after health education. Both of these studies explain that health education with video methods will improve the caregiver's knowledge.

Video screening methods can shape students' knowledge, attitudes and behavior from the results of the capture of the five senses by students. As described by Maulana (2009), mentioning that the success of health education in changing behavior is also influenced by the capture of the five senses. The five senses that channel the most knowledge to the brain are eyes (approximately 75% to 87%), while 13% to 25% of knowledge is acquired or channeled through other senses.

The effectiveness of mental health education between the intervened caregiver uses lectures and the caregiver who is intervened with video methods is both an increase in knowledge, the lecture and video methods are good to be used by researchers in delivering mental health education

materials to caregivers because they can both increase the level of knowledge to the caregiver. However, the lowest increase in the knowledge score was for the caregiver who used the lecture method, because in the presentation of the material it was felt less attractive and the lecture material was only equipped with writing and drawing by the presenter. The highest level of knowledge is for caregivers who are given mental health education using video, because the caregiver can see the steps directly demonstrated by the model via video, can attract the attention of the caregiver to stay focused, the material, so that the caregiver will not feel bored and lose concentration.

On the other hand with the use of the lecture method, although respondents also experienced an increase in value from the results of the pre-test and post-test, but overall that by using the lecture method is still lower in value achieved by respondents. Lectures that have been delivered in simple language, but respondents only rely on the sense of hearing to study the mental health education material they have obtained. Unlike the case with video media, respondents did not only rely on the sense of hearing, but the sense of vision was also very important to help remember the material presented. The results of this study are in line with the research of Purnama (2013) which states that video media is more effective in increasing students' knowledge about drug hazard in Mojosoongo Boyolali 3 Public Middle School.

This shows that basically the two methods used have the effectiveness of changing the knowledge of the caregiver caring for the hallucination client at home. In accordance with the objectives of health education, basically involves three things, namely increased knowledge (knowledge), changes in attitude (attitude), and skills or behavior (practices), which are associated with mental health problems in the community (Notoatmodjo, 2012).

Conclusion

This study aims to compare the effectiveness of mental health education using video and with methods that have been commonly

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done (lectures). The sample that followed this study were 60 people (30 people in the video group and 30 people in the lecture group). The conclusions of the research that was obtained were video methods that were more effective in increasing the caregiver's knowledge about hallucinations in the provision of mental health education.

Suggestion

- 1) Puskesmas should be the executor of primary health services that directly relate to the community, can work with nursing education institutions to conduct training for health workers or nurses who hold mental programs in their health centers about providing mental health education using video methods as a basis for improving ability to provide more comprehensive health education by involving caregivers or families who have hallucinatory clients.
- 2) Mental health education using video methods can be applied in the mental nursing system, especially nursing community soul. Puskesmas as primary health care services can apply mental health education using video methods or provide videos on how to care for hallucinations clients through a home visit program to caregivers or families who have hallucination clients in their homes.
- 3) Based on the results of the above research can be continued research on the factors that influence the improvement of the caregiver's knowledge in caring for hallucination clients in his home. Research can also be continued with research on family attitudes and behavior in hallucinatory care.

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Relationship of Family Support Towards Self-Management and Quality of Life of Patients with Type 2 Diabetes Mellitus

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Abstract

DM disease will be suffered for life, so the patient is expected to establish self-management behavior in managing the disease. Self-management behavior in patient tends to decline with increasing complications perceived by patients. The presence of social support one of important factors to improve adherence of self-management Diabetes patients. The purpose of this study was to assess the relationship of social support towards self-management and the quality of life in DM patients in Bandung. This research used correlational approach with purposive technique sampling. Numbers of respondent were taken from the region of 10 Puskesmas with highest DM in Bandung on 92 patients who came to Puskesmas. The questionnaires used were Hensarling Diabetes Family Support Scale (HDFSS), Summary of Diabetes Self-management Activities Measure (SDSCA) and SF-36. The analysis used analysis using frequency distribution, and Spearman-rho. Most respondents (51.1%) had social support below the group median. Most respondents (50%) had a quality of life below the group median. Most respondents (52.2%) had DM self-management behavior below the group median. Bivariate results showed no relationship between social support support and self-management and quality of life of respondents (p value = 0.801). There is no significant relationship between social support and self-management and quality of life. Therefore, the studies are expected to be recommendations of this study was integrate nursing care to improve self-management and quality of life of DM patients.

Keywords: Diabetes mellitus, quality of life, self-management, social support.

Introduction

Along with technological advances in the world of health, there has been a shifting disease pattern in the world. One of them is the number of diseases caused by lifestyle is growing more compared with the infectious diseases or other diseases. One of the diseases caused by lifestyle is Diabetes Mellitus. Based on data of WHO in 2010, the amount of DM patients in the world was 8.4 million people and Indonesia was ranked at the fourth largest number of DM patients in the world (WHO, 2010). Epidemiologically, WHO estimated that by 2030 the prevalence of DM in Indonesia will be reaching 21.3 million people (Ministry of Health Republic of Indonesia, 2011). Based on data of the International Diabetic Federation (IDF) in 2011, Indonesia was ranked at the 9th largest number in the world. The Results of Basic Health Research (Riskesdas) in 2013 conveyed that the prevalence of DM patients tended to be higher in urban than in rural area. Based on data of Riskesdas (2013) West Java Province was ranked at the 12th in Indonesia with the prevalence of 2% (Riskesdas, 2013). In Bandung, in 2010 the prevalence of DM disease reached 2% (Health Profile Public Health Agency of West Java Province, 2010). Every year the data of DM patients in Indonesia not only experiences an increase in its prevalence but also its morbidity. According to WHO (2014), Diabetes mellitus was the third disease that caused death and required palliative care. Diabetes mellitus (DM) is a metabolic disease characterized by elevated levels of blood glucose (hyperglycemia) occurs over a long period, due to insulin secretion abnormalities, insulin work, or either (ADA, 2013). DM disease will be suffered for life by the patient, therefore the patient is expected to establish self-management behavior in managing the disease.

The ability of DM patients in implementing self-care is influenced by internal and external factors (Orem, 2001). Internal factors can be influenced by individuals such as knowledge, self-efficacy, spiritual, while external factors are influenced by environments such as social support (Sonsona, 2014). Intensive family support was able to improve self-

management behavior of type 2 DM patients hence increased the motivational factor of Latino women who suffered from DM to have exercise (Choi, 2009), decrease HbA1C (Barrera, Toobert, & Strycker, 2014) that ultimately affected the control of blood sugar and improved the quality of life of patients with type 2 DM (Isworo & Saryono, 2010; Yusra, 2011; Tamara, Bayhakki & Nauli, 2014; Rahmawati, Setiawati, & Solehati, 2015). Research King et al. (2010), revealed that better social support will result in better persistence of self-management. Complying with a series of self-management actions that will last a lifetime is basically a big challenge and not an easy thing to do, feelings of bored that causes DM patients no longer discipline self-management actions so that family support is needed to help the patient has the ability to remain maintaining self-management measures at an effective level in managing DM (Luthfa, Lukman, & Sari, 2016; Gao et al., 2013).

Support from the family can increase motivation and prevent stress in people with type 2 diabetes mellitus (Antari et al., 2011), improve adherence to diet (Fauzia, Sari, & Artini, 2013) and can improve self-management behavior persistence (Huang et al., 2014) that will ultimately affect blood sugar control and improve the quality of life of DM patients (Wahyuni & Anna, 2014; Yusra, 2011). In contrast to research conducted by Hasanat (2015) and Yin Xu et al. (2008) which states that there is no relationship between family support with self-management in patients with DM. Handayani research (2012) states that the support of awards and information has no effect because the patient feels his own knowledge so that reject the information provided by the family. Similarly, Rosland et al. (2008) found no association of family support with medication adherence, diet, physical activity, and foot care. The purpose of this study was to assess the relationship between family support towards self-management and the quality of life of DM patients in Bandung.

Method

This research design was a descriptive

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correlational study with a population of Diabetes patients registered in the 10 highest health centers in the city of Bandung those were Pasundan, Babakan Sari, Ramdan, Sarijadi, Arcamanik, Pasir Kaliki, Garuda, Ibrahim Adjie, Babakan Surabaya, and Ujung Berung. Researcher was collect data from a list of diabetes patients in the Puskesmas. The technique used non probability sampling. The inclusion criteria of respondents were 1) age more than 15 years old. The number of 92 samples were type 2 Diabetes Mellitus who came to Puskesmas. Number of samples is taken using the Slovin formula with an error rate of 10%.

This study used 4 questionnaires. First, the questionnaire of Demographics Data of patients and families which was made by the researchers. Demographic data consist of general characteristics and health characteristics. Second, family support variables using Hensarling Diabetes Family Support Scale (HDFSS). This questionnaires consists of 25 statements with the answer of choice always, often, rarely and never include about infomational support, award support, emotional support and instrumental support. Third, self-management using modification of instrument of Summary of Diabetes Self-management Activities Measure (SDSCA) (Toobert, Hampson & Glasgow, 2000) and DSMI . Self-management Diabetes mellitus questionnaires consist of 29 statements with answer choices always, often, rarely, never. The questionnaire covered 5 domains: exercise, diet, health care control, and blood sugar checks. Fourth, the quality of life using

the quality of life for DM patient instrument from SF-36. SF-36 questionnaire consists of 11 statements with a choice of answers always, every so often, sometimes, once in a while, never which consist of health conditions, physical activity, social activities and pain. The three questionnaires have been tested for validity and reliability.

Data processing was done by descriptive and inferential. Descriptive data analysis was used to process the patients and family demographic data, family support, self-management of DM patients, and the quality of life. The data were presented in the form of Median and Quartile. Inferential analysis was used to identify the relationship of family support towards self-management DM patients and the quality of life by using Spearman-rho analysis.

All the respondents in the study got explanation both verbally and in writing about this research. The respondents' willingness were considered by a written or verbal statement by them. Researchers had ensured that participation in the study was voluntary and they can take off participating at any time without negative consequences. The contact information of the researchers (telephone and address) was given to the research subject. All information was kept confidential. The results of the study were reported in groups and only for academic purposes. There was no hazard to participate in this research.

Result

Table 1 Respondents' Characteristics

Variable	N	%
Puskesmas (Public Health Center		
Pasundan	5	5.4
Babakan Sari	8	8.7
M. Ramdan	13	14.1
Sarijadi	10	10.9
Arcamanik	8	8.7
Pasirkaliki	11	12
Garuda	9	9.8
Ibrahim Adjie	6	6.5
Babakan Surabaya	12	13
Ujung Berung	10	10.9

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Age		
40–50 years old	53	57.6
60–69 years old	39	42.4
Gender		
Male	27	29.3
Female	65	70.7
Marital Status		
Not yet married (single)	3	3.3
Married	69	75
Widow/Widower	20	21.7
Ethnic		
Sundanese	78	84.8
Javanese	14	15.2
Occupation		
House wife	60	71.7
Labor	10	10.9
Civil Employees	4	4.3
Private employees	4	4.3
Enterpriser	3	4.3
Other	3	4.3
Education		
Unschooling	1	1.1
Elementary school	36	39.1
Junior high school	28	30.4
Senior high school	22	23.9
University	5	5.4

Table 2 Respondents' Clinical Characteristics

Variable	n	%
Duration of Diabetes		
Less than 3 years	55	59.8
More than 3 years	37	40.2
Complaints after taking the medicine		
Yes	22	23.9
No	70	76.1
Smoking		
Never	66	71.7
Ever	10	10.9
Still	18	17.4
Activity		
Working	31	33.6
Doing household chores	61	66.3

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Exercise/Sport		
Never	26	58.3
Walking	59	64.1
Running	1	1.1
Gymnastic	6	6.5
Diet		
Regular	59	64
Irregular	33	35.9
Control to hospital		
Regular	13	14.1
Irregular	79	87.8
Co-morbid		
Yes	54	58.7
No	38	41.3
BMI		
Thin	11	12
Normal	56	60.9
Overweight	20	21.7
Obese	5	5.4

Table 3 Mean, Standard Deviation and Self-management Level of DM and the Quality of Life of DM Patients

Variable	Min-Max Score	Mean	SD	Below Median		Above Median	
				f	%	f	%
Self-management	31–108	80.29	12.11	48	52.2	44	47.8
Quality of Life	72–111	91.23	7.31	46	50	46	50
Family Support	88–263	173.97	48.63	47	51.1	45	48.9

Table 4 The Results of Bivariate Analysis

Subvariabel	Self-management		Quality of Life	
	Correlation coefficient	p-value	Correlation coefficient	p-value
Social Support	0.27	0.801	0.27	0.801

From the table above, it can be seen that the sample was dominated at the age of 40–59 years (57.6%) with female gender (70.7%), Sundanese (84.8%), married status (75%), occupation as the housewives (71.7%), elementary school education (39.1%).

From the table above can be obtained that the clinical data of respondents who had suffered DM less than 36 months (55%), with no complaints after taking medicine (76.1%), did not smoke (71.7%), did the household chores (66.3%), had a walk for sport (64.1%), had regular diet (64.1%), controlled to

doctors/hospital irregularly (87.8%), had no co-morbid disease than DM (58.7%) and got a Normal BMI (60.9%).

From the table above, most respondents (51.1%) had social support below the group median. Most respondents (50%) had a quality of life below the group median. Most respondents (52.2%) had DM self-management behavior below the group median. Bivariate results showed no relationship between social support and self-management and quality of life of respondents (p value = 0.801).

Discussion

The Relationship of Family Support with Self-management of DM Patients

Family support is the help given by other family members so it will provide physical and psychological comfort for people who faced the stressful situations (Taylor, 2006). The process of family support will occur during the lifetime, with the nature and type of social supports varying in each stage of the family life cycle. However, in all stages of the life cycle, family social support allows the family to fully function and can improve adaptation to family health (Friedman, 2010). Several studies have shown a relationship of family support to self-management of DM patients. In this study did not prove it. This is similar to the Hasanat study (2015) and Hidayati (2017), that family support has no contribution with self-management DM. According to Shumaker & Hill (in Hasanat, 2015), a too deep family support can cause stress if the support given in the form of control or rule, in addition, will benefit the emergence of healthy behavior, but it also can provoke stress to the patients so that affected on the self-management. According to Xu et al (2008), that family support has no relationship with self-management. However, family support will be indirectly influenced by the patient's own convictions in order to perform self-management well (Xu et al, 2008). In another study of 164 participants with DM, Rosland et al. (2008) found no relationship of family support with medication adherence, diet, physical activity, and foot care due to factors such as family characteristics and family culture itself thus influenced self-management in African-Americans. Similarly, Gallant's study (2003) found no strong relationship between support with pharmacotherapy adherence and monitoring glucose levels due to lack of family knowledge and understanding that sometimes limiting them to help with the emotional support that would be a barrier to self-management activities of people with chronic disease.

From the analysis of family support to self-management, there is no relationship between the two sub variables due to internal factors such as gender. In this study more are

women who do not work. From the results of family support analysis of self-management, there is no relationship between the two sub variables due to internal factors such as sex and employment background. In this study more are women who do not work. In addition it is of the duration of DM felt by the patient. Most of the respondents are those who have DM duration less than 3 years.

In accordance with Huang, Zhao, Li, and Jiang, (2014) that family support can increase the persistence of self-management behavior. The supports given could be material and spiritual supports that will reduce psychological stress, relieve tension, improve social adaptability and patients will be more determined to fight the disease. In patients who have been diagnosed with DM, the participation of other family members in guiding medication, diet, physical exercise and positive spare time for family's health are the active roles for the success of DM self-management.

Along with the time, the family is the largest resource for DM patients' self-management at home. The family in its function as the primary caregiver provides continuous care that is needed deliberately over time (Luthfa, Lukman, & Sari, 2016). Regardless of the type of chronic illness experienced, the family is challenged to try helping family members who diagnosed with DM in order to stay healthy, to prevent additional complications, to incorporate changes in physical and mental status in the role and function of the family, and to manage any complications or disabilities (Kaakinen, Hanson, & Denham, 2010).

The Relationship of Family Support with Quality of Life of DM patients

The results of this study, there is no relationship with between family support and quality of life on the respondents. It meant, different from the previous research. The greatest relation value was shown by Antari et al.'s study (2011) which stated there was a significant relationship between family support and quality of life of Type 2 DM patients (p-value = 0.000) with an influence contribution of 95.5%. While the results of Yusra's research (2011) stated that there was a relationship between family support and

quality of life Type 2 DM patients (p-value = 0.001, $r = 0.703$). According to Antari, Rasdini, and Triyani (2011), the social support was very helpful for people with type 2 diabetes to be able to increase confidence in their ability in doing self-management. From these results, family support has a negative impact on patients' quality of life. This could be because the patients are already independent and no longer need the family support. In addition, the assumptions of family support researchers are below the median due to many factors. Age, gender, education and health characteristics of respondents such as old DM, comorbid disease owned.

Conclusion

There is no significant relationship between social support and self-management and quality of life. the results of this study can be used as a basis for other research and integrated nursing care to improve self-management and quality of life of DM patients.

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The Effect of Five-Finger Relaxation Technique to The Sleep Quality of Breast Cancer Patients

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Abstract

Sleeping disorder is a symptom often suffered by breast cancer patients. To overcome it, five-finger relaxation technique is considered helpful. In previous research, this technique can be utilized to lower the level of anxiety and fatigue. This research, therefore, aims at identifying the effect of five-finger relaxation technique to the sleep quality of breast cancer patients. The research method used that of quasi experiment with pre-test and post-test control group design. The population included breast cancer patients within the service of the healthcare in Sekarwangi Hospital and R. Syamsudin SH Hospital. Sampling was done consecutively. The number of samples from control and intervention group were 30 people each. The intervention group received a standard hospital therapy and five-finger relaxation technique divided in 15 sessions with 10-15 minutes time every other day for 1 month. Meanwhile, the control group received only a standard hospital therapy. The measurement tool was PSQI. The analysis used paired sample t-test and independent sample t-test. The result of the research has shown a difference in scores during pre-test and post-test of the sleep quality on both groups due to p value < 0.05. A difference has striken on the scores of sleep quality between control and intervention group with the latter having higher scores than the former. It can be concluded that five-finger relaxation technique does affect the quality sleep of breast cancer patients. The result of this research can be an additional intervention to decrease the symptoms suffered by breast cancer patients.

Keywords: Breast cancer, five-finger relaxation technique, sleep quality.

Introduction

Cancer is one of the main causes of morbidity and mortality worldwide. Globally, almost 1 of 6 deaths are due to cancer, around 70% of which occurs in countries with middle- and low-income per capita. Further, WHO claimed that one of the most common cancer-related deaths is breast cancer with 571.000 fatalities in 2015 (WHO, 2017).

Breast cancer is the most diagnosed cancer of all and the main cause of cancer-related deaths for women worldwide. Based on the total of 23% cancer cases, 14% of which is of breast cancer, and around 1.15 million patients are diagnosed with invasive breast cancer every year. Moreover, about 40 million women died each year of it (Juvet et al., 2017).

According to Basic Health Research in 2013, the prevalence of breast cancer in Indonesia reaches up to 0.5 to 1000 women. More than 80% breast cancer cases in Indonesia were on the advanced stage, where medication is found rare to be successful. Meanwhile, West Java is the third province with the highest number of breast cancer phenomena, which is 6701 people with 0.3% prevalence (The Ministry of Health RI, 2016). Breast cancer may affect the patient in some aspects, including physical (pain, helplessness, exhaustion, sleeping disorder, and disrupted mobility), psychological (full of uncertainty, anxiety, and depression), social (isolation from society and financial burden), and spiritual (guilt, inner conflict as to accepting and denying the fact of her being ill) (Lubis & Hasnida, 2009); (Tirgari, Iranmanesh, Fazel, & Kalantari, 2012). The crystal ball of it all leads the breast cancer patient to have lower life quality (Zou, Hu, & McCoy, 2014).

The implementation of breast cancer is done through a series of medicational stages. The most common cancer treatments are surgery/incision, chemotherapy, radiational therapy, hormonal therapy, body immune therapy, and/or the combination of all. Although these types of treatment might recover the patient's condition, it might cause side effects as well as a set of physical and psychological symptoms (Mustian, Cole, Lin & Asare, 2016). Some of those conditions

can even impair the patient's ability to obey medication protocols, perform daily activities, and maintain conventional life standards (Kwekkeboom, Chermin, Lee, & Wanta, 2010).

Some of the symptoms most reported due to cancer and its medication include sleeping disorder, fatigue, pain, loss of physical abilities, sarcopenia, cachexia, and osteoporosis (Mustian, Cole, Lin, & Asare, 2016). Among these, sleeping disorder is the most often suffered by breast cancer patients (Gehrman, Garland, Matura, & Mao, 2016). A cancer-diagnosed woman typically possesses a high sleeping disorder prevalence during treatment and recovery (Palseh, Ulusakarya, Tudela, & Gerry, 2013); (Mustian, Cole, Lin, & Asare, 2016). These patients thus have a higher risk of lower life quality, immune system, cognitive abilities, and abilities to perform daily routine.

A treatment, therefore, is necessary for this. Two approaches are being implemented; one is pharmacologically and the other is non-pharmacologically. The former approach includes Cognitive Behaviour Therapy (CBT), an effective non-pharmacological therapy to overcome problems related to sleeping disorder. It is a short-term therapy (12 to 20 sessions) that emphasize the importance of patient's thoughts in deciding what they feel and what they will do (Kwekkeboom, Chermin, Lee, & Wanta, 2010); (Bower, Julienne E, 2008; Mendoza, Capafons, Gralow, Syrjala, & Rodriguez, 2016; Mustaffa, Abu, & Yusouf, 2012).

One of the applicable CBT form is relaxation technique. It is a technique which creates a relaxing condition to the autonomous nervous systems, leading up to a stabilized blood supply in muscles and decrease oxygen consumption, heart rates, perspiration, and muscle activities (Nugroho, 2016). Other relaxation techniques include autogenic training, progressive training and meditation (Lichstein, 1988).

One of the autogenic training techniques to overcome psychological disturbances is five-finger relaxation technique. It is a process that utilizes the power of mind by moving the body for self-recovery and maintain health or a relaxed state of mind through inner communication involving all senses such as

smell, sight, and hearing (Davis & McKay, 2008). Smeltzer and Bare also stated that five-finger relaxation technique is useful to handle anxiety of the patients because from a guided process of imagination will create a vision accepted by the receptions from all senses, creating a relaxed state of mind.

The evidence of how the five-finger relaxation technique is good for an alternative for breast cancer patients yet remains unidentified. Based on this result, the aim of this research is to identify the effect of five-finger relaxation technique toward the sleep quality of breast cancer patients in Sekarwangi Hospital and R. Syamsudin, SH Hospital.

Method

The research design is quasi experiment with pre-test and post-test control group design. The population in this research is all breast cancer patients within the healthcare service of Sekarwangi Hospital in Sukabumi District and R. Syamsudin Hospital, SH in the city of Sukabumi. The sampling technique is done consecutively with the number of samples as many as 60 respondents; 30 respondents for each intervention and control group. In intervention group, a hospital standard protocol is applied to breast cancer patients, in addition to five-finger relaxation technique. Meanwhile, in control group, a standard

hospital protocol is applied without the five-finger technique. The technique is done to the intervention group for one month every other day. The total of the sessions is 15, with 1 session spending 10 to 15 minutes each.

The five-finger relaxation technique method can be done around 10 minutes through deep concentration and a relaxed state of mind. It can be done by pressing the thumb against the middle finger, while remembering the happiest moment of the patient’s life. This is followed by pressing the thumb against the ring finger, while remembering the last time the patient had received appraisals. Lastly, the technique involves the thumb pressing against the ring finger, while remembering the most beautiful place the patient has ever visited (Keliat, et al., 2011).

The instrument used is Indonesian-translated questionnaires; this is to measure the sleep quality using Pittsburgh Sleep Quality Index (PSQI) (Nugroho, 2016). The time of data sampling and experiment in this research was done from 23 December 2017 to 2 March 2018. The ethics of this research, before researching the selected samples, were adjusted upon the informed consent from the respondents that they are fully conscious to be involved in this research.

Result

A. Respondent’s Characteristics

Table 1 Homogeneity Test of Respondent’s Characteristics to the Intervention and Control Group

Characteristics	Group				X ²	P
	Intervention		Control			
	f	%	f	%		
Age						
<40	9	30	6	20	0.800	0.371
> 40	21	70	24	80		
Marital Status						
Married	22	73.3	24	80	0.373	0.542
Single	8	26.67	6	20		
IMT						
<18.50	7	23.33	10	33.33	0.739	0.390
18.50–24.99	23	76.67	20	66.67		
Employment						

Employed	4	13.33	4	13.33	0.001	1.000
Unemployed	26	86.67	26	86.67		
Education						
Elementary	16	53.33	18	60	0.694	0.707
Middle	14	46.67	12	40		
Duration of Illness						
<1 year	24	80	22	73.33	0.373	0.542
> 1 year	6	20	8	26.67		
Stadium						
Stadium 1	17	56.67	14	46.67	0.764	0.682
Stadium 2	8	26.67	11	36.67		
Stadium 3	5	16.66	5	16.66		

The description of respondent's characteristics from both control and intervention group are presented as follows.

Based on the table 4.1, the result of homogeneity test for all aspects of the respondent's characteristics shows $p > 0.05$. This means that the respondent's characteristics in the control and intervention group are similar.

In detail, the characteristics in intervention and control group, respectively, show that they are generally aged more than 40 years old (70% and 80%), married (73.33% and 80%), have an IMT within range 18.50–24.99 (76.67% and 66.67%), are unemployed (86.67%), elementary-school graduates (53.33% and 60%), suffering cancer for more than 1 year (80.00% and 73.33%) and in the first stage of cancer (56.67% and 46.67%).

B. Univariate and Bivariate Analysis

Table 2 Test Results of Pre-Post with Paired Sample t-Test and Difference Test Results with t-Independent Test to the Scores of Sleep Quality

PSQI Scores	Mean	Paired Sample t-Test			Uji t-Independen			Mean Diff.
		Mean Diff.	t		Mean Diff.	Mean Marg.	t	
Control Group								
Pre-Test	16.67	1.27	5.917	0.000	1.27			
Post-Test	15.40					0.83	2.338	0.023
Intervention Group								
Pre-Test	16.97	2.10	7.367	0.000	2.10			
Post-Test	14.87							

1. Sleep Quality

The description result of mean score of sleep quality. The mean difference test during pre-test and post-test toward the score of sleep quality using paired sample t-Test and mean difference test control and intervention group uses Independent sample t-Test. The analysis result will be explained on table 4.2 as follows.

Table 4.2 shows that the mean and SD score of sleep quality in control group undergoes a decrease from 16.67 (1.184) to 15.40 (1.133). For the intervention group, it also undergoes a decrease from 16.97 (1.608) to 14.87 (1.332). Both groups undergo a decrease in PSQI scores that indicate that their sleep quality has gotten better.

Table 4.2 also shows a difference in pretest and posttest scores to the control group from 16.67 to 15.40 (p value = 0.000). For the intervention group, there is also a mean

difference in pre-test and post-test scores from 16.97 to 14.87 (p -value = 0.000). Both groups have improved, despite the significantly higher margin scores in intervention group than in control group (p value = 0.023).

Discussion

A. Sleep Quality

Sleeping disorder in breast cancer patients cover various kinds of sleeping disorder such as insomnia, restless leg syndrome, and sleep apnea. Although this might occur more often to female breast cancer patients, insomnia is among the most occurring.

In this research, both control and intervention group undergo an increase in sleep quality. However, the increase in intervention group is significantly higher than in control group. In control group, the increase occurs because the participants were given a standard hospital therapy that covers the recovery for general conditions such as blood transfusion, symptomatic treatment, and wound treatment from breast cancer.

The five-finger relaxation technique gives a positive impact to the sleep quality of breast cancer patients. This therapy gives a positive result when done routinely. The mechanism of autonomous nerves will be affected by emerging changes and occur during the relaxation or after. The technique also creates emotional responses and soothing effects, shifting the sympathetic dominant nervous system to be parasympathetic nervous system. The combination of deep breath technique and meditation done in five-finger relaxation technique may trigger the release of neurotransmitter NO (nitride oxide) which affects the performance of simple muscles to become more relaxed and stimulate the blood veins for vasodilatation. This will accelerate the work of blood supply to the body and produce more energy (Welz, 1991).

Muafiro also stated that the five-finger relaxation technique may lower the level of anxiety of cervix cancer patients with p -value = 0.000 ($p < 0.05$). Similarly, Banon also claims that the technique is effective to lower the level of anxiety of hypertension patients with significance value of 0.019 ($p < 0.05$). It also gives positive impact as to improve

sleep quality. The result of this research supports the argument saying that the five-finger relaxation technique is effective to give a relaxing effect, provide comfort, lower anxiety level, and cause drowsiness (Bell, McLeod, Nelson, Fehnel, & Zografos, 2011). The five-finger relaxation technique is also able to trigger alpha waves and increase delta waves during sleep. This will maintain a deep-sleep condition that minimizes the chance of the body from getting suddenly awoken at night (Tang, Liou, & Lin, 2010).

Complementary therapy such as the five-finger relaxation technique can be one of the management alternatives in improving sleep quality non-pharmacologically. One of the benefits of this therapy is that it reduces the risk of side effects to occur from hypnotic-sedative drugs, which might just worsen insomnia complaints. Therefore, it will help to reduce the patient's cost and increase her level of satisfaction and prevent complication of unsolved sleeping disorders from happening.

Therefore, the technique is effective for independent nursing treatment or done individually by patients and their family at home.

Limitations

In this research process, the daily activities of the respondents were not strictly observed and controlled. The activities were reported by the respondents themselves in a form of a log-book, and honesty was crucial.

In this research, many things have not been explored by the researcher, such as contributing factors to the sleep quality and such pain as psychosocial factor. Psychosocial factors like stress, anxiety, can be theoretically explained with the three observed symptoms.

Nursing Implication

This research has the affect to develop the field of nursing, specifically in handling the symptoms of sleep quality to breast cancer patients. This research proves that the intervention of the five-finger relaxation technique significantly improves sleep quality. It is expected that the research result can be a research material for the hospital in treating the breast cancer patients, particularly

those with sleeping disorder.

This research has shed a new light compared to previous research that only focuses on verifying one symptom individually. It has proven that five-finger relaxation technique is effective to overcome three symptoms in a way caused by the similar psychological issue.

Conclusion

The five-finger relaxation technique has a positive influence to the decrease of sleep quality to breast cancer patients.

Advice

A. For nursing field

The result of this research can be a reference to develop the field of nursing regarding the selection of intervention to improve sleep quality of breast cancer patients

B. For nursing service

Improving sleep quality needs a solid coordination, which is expected between one and another in Sekarwangi Hospital Sukabumi District and Hospital R Syamsudin, SH Sukabumi City, particularly in nursing the breast cancer patients. The result of this research can be a basis to develop the intervention of nursing to patients, especially in choosing the kind of treatment for breast cancer patients

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Effect of Schizophrenia Care Application (Ics Mobile) on Family Knowledge about Activities Daily Living (ADL) to Schizophrenic Patients

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Abstract

Activities Daily Living (ADL) is the most common problem in schizophrenia. One most crucial effort is providing health education to families is considered useful in order to be able to increase family knowledge of the treatment process. The use of health education media can take advantage of the development of smartphone technology so as to make health education more interactive. Moreover, the ICS_Mobile application contains information about ADL through text and video. The purpose of this study was to determine the effect of ICS_Mobile application on family knowledge about Activities Daily Living(ADL) in schizophrenic patients. This study uses a quasi-experimental research method with pre-test and post-test control group approach. The population is 341 members of schizophrenia family with a sample of 40 respondents, divided into 2 groups, the intervention group 20 respondents and the control group 20 respondents. Sampling was collected by using purposive sampling. Respondents' knowledge was measured using instruments developed by researchers and content testing and construct test with Crombach'sAlpa value of 0.954. Data were analyzed using repeatedmeasures ANOVA. The results showed that there was an increase in the mean score of knowledge after the intervention with the value ($F=121.819$ p value = 0.000), there was no significant increase in the average score of knowledge in the control group with the value ($F= 3.065$ p = 0.096), and there were differences the average knowledge between the control group and the intervention group with the value ($F=19.048$ p value = 0.000). The conclusion of this study that the provision of health education interventions using the ICS_Mobile application shows a significant influence on increasing family knowledge about Daily Living Activities (ADL) in schizophrenic patients. Researchers recommend the use of ICS_Mobile applications in health services as an option in increasing knowledge of schizophrenia treatment.

Keywords: Activities daily living, ICS_Mobile, Knowledge, Schizophrenia, Smartphone.

Introduction

Schizophrenia around the world has become a serious problem. Global data shows the World Health Organization (2016) the number of schizophrenics is more than 21 million people (men: 12 million people and women: 9 million people). In the United States, around 1 in 100 people is reported to have schizophrenia and more than 100,000 new cases are diagnosed each year (Michelle & Sherman, 2005). The Indonesian Ministry of Health in Rikesdas (2013) reported the number of people with severe mental disorders in Indonesia reached 1.7 per mile or around 1–2 people per 1,000 Indonesian population or around 400 thousand people.

The main problem experienced by Schizophrenia clients is the inability of patients to conduct Activities Daily Living (ADL) (Videbeck, 2011). The results of research conducted by Hardani, Basirun, and Sawiji (2009) showed that from 32 respondents 100% experienced an inability to fulfill Activities Daily Living (ADL) with different levels of dependence. Activities Daily Living fulfillment problems (ADL) are caused by changes in thought processes that cause setbacks in living everyday life.

Interventions in Activities Daily Living fulfillment process in Indonesia in the form of providing health education to families are still using simple media including visual aids, hearing (audio), and hearing and viewing aids (audiovisual) (Notoatmodjo, 2011). Whereas in the outside countries have carried out the development of health education media that is transformed into the benefits of smartphone features (Mosa, Yoo, & Sheets, 2012). In addition to its use in mobile clinical communication, smartphone applications can also be used in health education for patients, self-management of the disease, and remote monitoring of patients. The use of smartphones as medical devices can be useful in medical practice that focuses on the point of care, (Mosa et al., 2012).

The use of medical devices based on smartphone applications has significant potential in improving the efficiency of the health care system (Gaglani, 2013). The use of smartphone for health applications can also provide health education and information

to patients and families so that the use of interventions can improve self-management and changes in health behavior when and wherever they need (Li et al., 2014). Several studies have shown the effectiveness of using smartphone applications in the use of health education media (Kratzke & Cox, 2012). These results indicate that the provision of health education using smartphone applications is considered to provide effectiveness in facilitating and optimizing care for clients.

The use of smartphones has experienced a rapid increase, especially in Indonesia. Data released by the Technasia website (2014) Indonesia will exceed 100 million active smartphone users by 2018, making it the country with the fourth largest population of smartphone users in the world (behind China, India and the United States). However, this condition has not been maximized for the use of smartphone media as a health education media in the Activities Daily Living (ADL) fulfillment process for schizophrenic patients. It is hoped that the use of technology can help health workers in the treatment process in schizophrenic patients. Does using the ICS Mobile smartphone application improve family knowledge about the Activities Daily Living fulfillment process of schizophrenic patients?

Method

This study uses a quasi-experimental method, with the design of pre and post- test with control group and the design of this study involving one treatment and control group and conducting an assessment before the intervention is given to test changes that occur after the intervention. The population in this study was all families of patients who experienced schizophrenia in Majene District Health Center Work Area as many as 341 clients. The sampling technique uses non-probability samples with purposive sampling method, with a sample of 40 families (20 control groups and 20 intervention groups) with family inclusion criteria that care for schizophrenic patients and live at home with clients, families with smartphones, and a minimum educational background is middle

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school graduates.

The place of this research was carried out in the Work Area of Majene District Health Center, West Sulawesi Province, the time of data collection for 3 months and the instrument of family knowledge about the management of daily living activities (ADL) was made by the researcher based on theoretical review of the maintenance of daily living activities (ADL) at home and using the Bloom Taxonomy Cognitive Theory approach, which has been revised by Anderson & Krathwohl (2015), which consists of cognitive abilities to remember, understand, and apply with the answer points, namely (right and wrong). Assessment of knowledge about ADL in the form of a questionnaire consisting of 25 questions including knowledge of the ADL concept of schizophrenic patients, personal hygiene, dressing/ornamentation, eating & drinking, and elimination with a total score of 0–25, scores calculated based on conditions, correct answers scored 1 and the wrong answer is given a score of 0. The final calculation results indicate that the value of the respondent. The complete knowledge measurement instrument grid is in Appendix 3. This instrument has been tested for content validity to expert mental nursing education expert and validity test shows that from 25 questions, all questions are declared valid with Alpha-Cronbach reliability value of 0.94.

Intervention instruments used in this study is a health education media created by the researchers that was transformed into a smartphone application called ICS_Mobile which had been developed through preliminary studies and literature study approaches in the process of making ICS_Mobile applications. This ICS_Mobile application contains information about daily living (ADL) activities in schizophrenic patients consisting of providing information

through text that has information on the ADL concept of schizophrenic patients, and providing information through videos that provide illustration information motivating and treating patients in the process of fulfilling personal hygiene care, ornamental care, eating/drinking treatments, and BAB (feces)/BAK (urine) care.

The stage of the data collection process was done in the first day, the measurement of knowledge on the respondents (pre-test) is done, then the second day ICS_Mobile application is given by teaching the application how to operate and on the third day the researchers provide assistance in the use of the ICS_Mobile application later Knowledge measurement was conducted again (post-test 1) then the respondent used the ICS_Mobile application independently and the final stage was done by measuring the third knowledge after 2 weeks from the initial measurement (post-test 2), the data collection process took 2 months.

SPSS version 32 was used for data analysis. After the measures of central tendency were determined from the demographic data, analysis of variance was used to determine differences, if any, between the experimental and the control group. Analysis then progressed to the Family Knowledge scores for multivariate analysis using repeated measures ANOVA. There is a reliability of the Family Knowledge was supported by the calculation of alpha coefficients for both the experimental and control groups.

Result

1. Differences in changes in average scores of family knowledge levels about Activities Daily Living (ADL) before and after obtaining treatment in intervention groups and control groups (n1 = 20, n2 = 20).

Table 1 Differences in changes in average scores of family knowledge levels

Scale	n	Pretest	Posttest 1	Posttest 2	Difference OverTime	Difference Between Group/Time
knowledge levels						
Experimental	20	16.75 (2.35)	20.45 (1.14)	23.25 (0.96)	F=121,819	F=19,048
Control	20	16.65 (2.03)	16.65 (2.03)	16.90 (2.04)	p=.000	p=.000,
Total(within-time)	40				df=1	df=1

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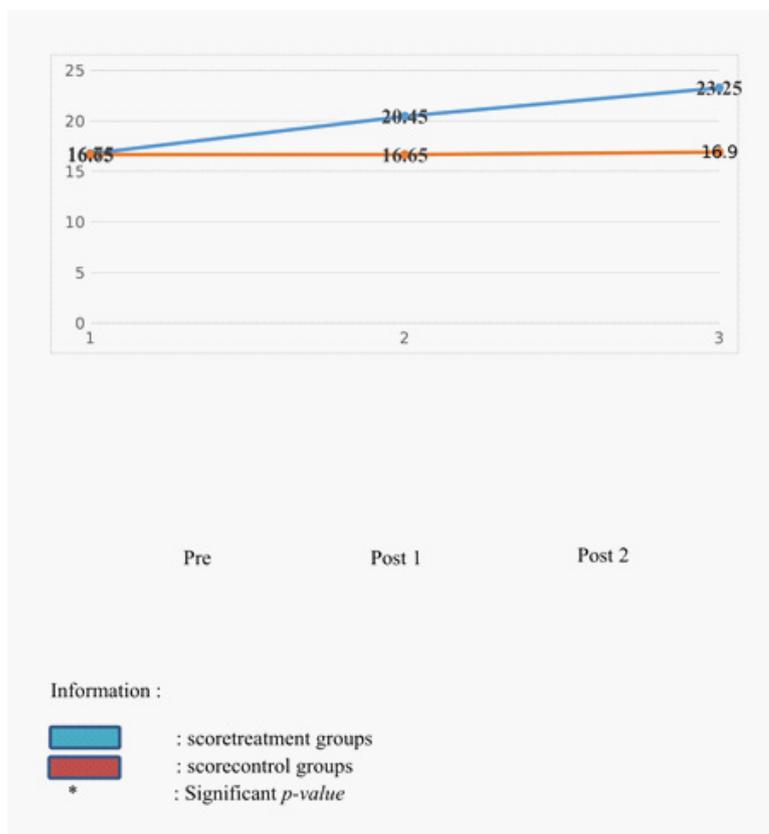
This study found the value of the average score in the intervention group at the initial measurement before being treated with the provision of smartphone media obtained an average score of 16.75 knowledge scores from the maximum minimal-value (0–25), after the initial measurement then given intervention using the ICS_Mobile application is done twice a period of time and then a second measurement is done with the results of the knowledge score shows an increase with a score of 20.45, the third measurement is done after one week the respondent uses the ICS_Mobile application independently with the results of a knowledge score of 23.25, this result shows the difference in the increase in knowledge scores for each intervention using the ICS_Mobile application by performing Repeated Anova test analysis obtained p value = value 0.000 <0.05.

In the control group showed the average score on the initial measurement before being treated by giving nurses routine visits

obtained the average score of knowledge score 16.65 from the maximum minimal-value (0–25), after the initial measurement then given intervention with perform routine nurse visits 1 time a week, the second measurement is done intermittently a day after the first measurement and results obtained no change in knowledge score with fixed score 16.65, the third measurement is done in the second week after the first measurement after giving a routine nurse visit showing results 16.90 knowledge score. These results indicate that there is no significant difference from the increase in knowledge scores every time a routine visit by a nurse by conducting Repeated Anova test analysis obtained p value = value 0.096 <0.05.

2. Difference in changes in average score of change in family knowledge about Activities Daily Living (ADL) between treatment groups and control groups

This study found the results of the



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difference in the average score of knowledge before and after the intervention in the control group and treatment with independent t test analysis which showed that the two final measurement results were significant differences with the value of $p = \text{value } 0,000$ with the average score of the intervention group 23, 25 and the control group 16.90.

3. Analysis of the long-standing relationship of using the ICS_Mobile application with an increase in family knowledge scores on Activities Daily Living (ADL) in schizophrenic patients.

The process of giving health education interventions to 20 respondents was carried out for 2 weeks with the first provision of getting assistance by researchers twice regularly and then the respondent used the ICS_Mobile application the following week independently with different intensity levels for each respondent. After analyzing using the Spearman Rank test, the results of $P\text{-value} = 0.000 (<0.05)$ showed that there was a significant relationship between the duration of smartphone use and the family knowledge score about ADL, the Spearman (r) correlation value of 0.989 indicating the direction positive relationship with the strength of a very strong relationship.

4. Evaluating the use of the ICS_Mobile application media in the intervention group

The evaluation process on the ICS_Mobile application used in the health education process is carried out quantitatively using a questionnaire to measure the level of ease of use of the ICS_Mobile application features with 3 aspects of questions including: 1) the system, 2) user aspects, and 3) usage aspects with the choice of answer items namely 1) difficult, 2) quite easy and 3) easy, from the results of the analysis on all the aspects above found the majority of respondents said it was easy to use with a percentage of 70% and 30% said it was quite easy on 20 respondents who used the ICS_Mobile application in the research process.

Discussion

This study showed that the intervention group

that uses ICS_Mobile as a health education media is effective and can be applied to the families of schizophrenic patients in the fulfillment of daily living (ADL) activities. The process of improving family knowledge every measurement shows a graph that continues to increase in each process of using ICS_Mobile as a health education media.

The initial process is carried out health education using the ICS_Mobile application for 2 weeks periodically the results of the average knowledge scores of respondents have increased in the second and third measurements. Effectiveness is seen in the provision of health education using the ICS_Mobile application that contains information on the process of care for Daily Living Activities (ADL) in schizophrenic patients by visualizing through text and audiovisual through video. This is in line with the theory of Cognitive Theory of Multimedia Learning (CTML) in Mayer (2004) which states that multimedia in the process of providing information is able to combine various types of media including text, images, sound and video so as to increase retention of one's knowledge. the provision of well-designed health information in accordance with the objectives to be achieved can change the thought process that is influenced by the increased knowledge and awareness that has been received from health education (Onono et al., 2014).

The effectiveness of the use of ICS_Mobile application in improving family knowledge can make the family independent in the process of maintaining Activities Daily Living (ADL). Mosa et al., (2012) revealed that the use of smartphones in providing information in the form of health education to patients and families can improve the ability of patients in self-management independently of the treatment of the disease and remote monitoring of patients. Research conducted by Kim, Shin, Lee, Kang, & Bartlett, (2017) shows the results that smartphone-based education can be an effective method for use in nursing education. This shows that the provision of health education using smartphone applications is considered to provide effectiveness in facilitating and optimizing care for clients.

The results of the analysis of the long-

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term effectiveness of the use of the ICS_Mobile application show the results that the more often respondents use the ICS_Mobile application, the higher the family knowledge score. Providing information in a span of two weeks using media by combining images and sounds called audiovisual media can provide up to 50% better memory than other media (Edgar Dale in Jackson 2016). This is also in line with Pavlov's concept of Classical Conditioning which states that in the learning process requires continuous practice and all require Conditioning Process (Pavlov, 1849–1936 in Cambiaghi and Sacchetti, 2015). Alternative use of smartphone media that can be used whenever and wherever the family needs thus it can increase the quantity and quality of health information obtained.

At the end of the data collection process, researchers evaluated the level of ease of use of the ICS_Mobile application and found that the majority of respondents (70%) revealed that the use of the ICS_Mobile application feature was easy to use. according to Sujana and Rivai, (2005) that in the process of health education that plays an important role in supporting the success of the delivery of information is the selection of the media used. the use of ICS_Mobile application on the provision of health education is considered in accordance with the needs of respondents in increasing knowledge about the patient's ADL care process by adjusting the level of ease in the process of use with the ability of respondents in general.

Conclusion

The conclusion of this study that the provision of health education interventions using the ICS_Mobile application shows a significant influence on increasing family knowledge about daily living activities (ADL) in schizophrenic patients.

Health education intervention using the ICS_Mobile application is expected to be a special consideration for health services as one of the health education media that can be applied in treating schizophrenic clients who receive home care by focusing on increasing family knowledge in treating schizophrenic

patients. Subsequent research is suggested to see the effectiveness of ICS_Mobile application on attitudes and behavior in the care of daily living activities (ADL) and can develop collaboration-based applications with treatment through doctor instruction.

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