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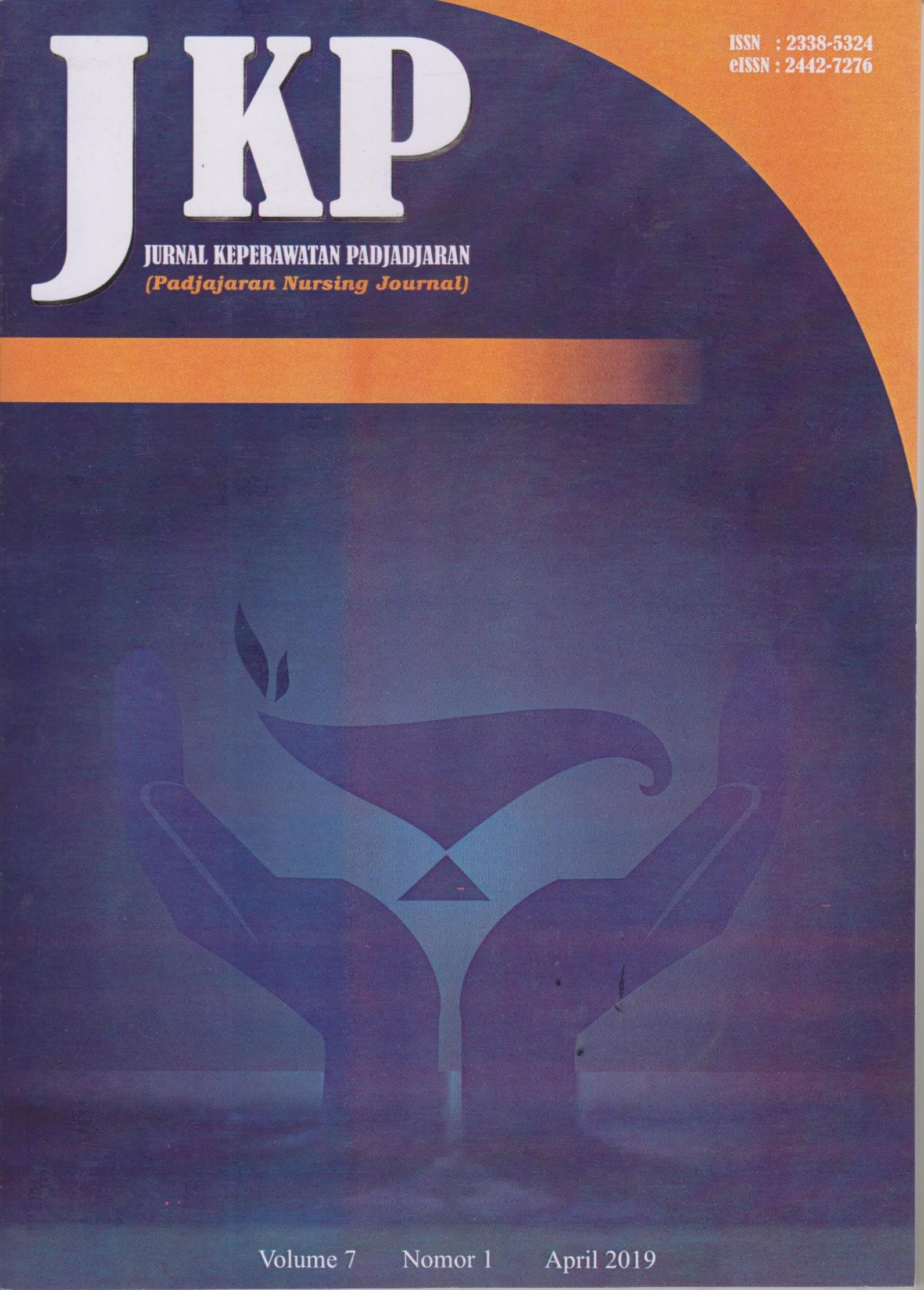

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Relationship of Adolescents' Characteristics, Smartphone Uses and Premarital Sexual Behavior in High School Students

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Abstract

Adolescents' problematic behavior is in relation to premarital sexual behavior. Adolescents' premarital sexual behavior can cause abortion, unwanted pregnancy, death, potential HIV/AIDS infection as well as moral decency crime in Gowa District. Factors of premarital sexual behavior among adolescents include gender, origin of school, status and frequency of dating, religious norms, household norms, knowledge and the uses of smartphone. This research aims at analyzing adolescents' characteristics of and the uses of smartphone in relation with premarital sexual behavior among high school students in Gowa District, South Sulawesi Province. It was the correlational design quantitative research. Total samples amounted to 500 high school students in Gowa District, South Sulawesi Province after these were selected with the cluster sampling. The questionnaire used in this research consisted of religious norms (the reliability test results of 0.791, R-value of 0.397–0.678), household norms (the reliability test results of 0.856, R-value of 0.430–0.893), knowledge (the reliability test results of 0.738, R-value of 0.362–0.514), and premarital sexual behavior (the reliability test results of 0.844, R-value of 0,483–0,763), smartphone use with the calculated R value > r table (0.514) the reliability indicates the alpha cronbach's value> 0.60. The analyzed data use Chi square and logistic regression. The research results show that the premarital sexual behavior has total risk value of 66.0% and the unrisky value of 34.0%. It relates to some adolescents' characteristics among others frequency of dating (p=0.000), status of dating (p=0.000), religious norms (p=0.000), household norms (p=0.000), knowledge (p=0.000), and smartphone use (p=0.000), the variables of adolescents' characteristics i.e. gender and the origin of school do not have significant relationship(p>0.05).Thesmartphoneuseisthemostsignificantfactorwiththepremaritalsexualbehavior(OR=3.583). The smartphone use is the most significant factor with premarital sexual behavior, and therefore, it indicates that teachers at school and parents at home should who carry out the control and adolescent education in the smartphone use are important factors to be upgraded. The school based health education program can avoid the risky premarital sexual behavior, and the program can focus on the control of smartphone use and skill training among adolescents.

Keywords : High school students in Gowa District, premarital sexual behavior, smartphone use.

Introduction

Adolescents are the next generation of a nation who has potential valuable if they have optimal quality appropriate to their growth and development (BKKBN, 2012). If they have problems, their growth and development can be disturbed (Alender, Rector & Warner, 2010).

Adolescent problems frequently occur in relation to physical, psychological and social changes (Potter & Perry, 2010; Sarwono, 2011; Ali & Asrori, 2012; Stuart, 2013). The physical change in adolescents occurs during puberty after an adolescent boy begins to like the opposite gender so that he frequently undergoes a wet dream. On the other hand, an adolescent girl undergoes menstruation. Moreover, the psychological change in adolescents make them to take risks when they do something, face challenges and have a great sense of willing to know. Therefore, adolescents become the risky group with health problems. Furthermore, the social change in adolescents occur when they interact with their friends at school, out of their households and social environment, and therefore, they become more risky to do negative behavior which can cause health problems in society (Vingilis, Wade, & Seeley, 2002; Ali & Asrori, 2012).

Adolescent problems include among others smoking, improper diet, lack of physical activities, drug and alcohol misuses and premarital sexual behavior. Moreover, a health problem that frequently and mostly occurs in adolescents is premarital sexual behavior (BKKBN, 2012; Stuart, 2013).

Premarital sexual behavior is a sexual behavior conducted before marriage. Many researches show that the premarital sexual behavior is relatively high among adolescents. The research of Chiao, Yi, & Ksobiech, (2012) di Taiwan with the research object of students showed that premarital sexual behavior significantly occurred to adolescents (16%) who did the premarital sexual relationship. The research hadthe sample of 49% of the adolescent boys and 51% of the adolescent girls with the age group of 20 years old. Moreover, the research of Zhang, Gao, Sun, Lou, et al (2016) among adolescents in Shanghai, Taipei, and Hanoi showed that social economic status had closed relations with the premarital sexual relationship that occurred 3.64 times for the adolescents in Hanoi. Moreover, the research of Mahyar (2011) related to adolescents of 13 STIKES (College of Health Sciences) in Jakarta Timur and it showed that there were 65 students (29.5%) who did the premarital sexual behavior from kissing lips and mouth, petting and sexual relationship or intercourse. Finally, it was found in the research of Center for Adolescents Information and Service (PILAR) PKBI Central Java Province in the period of June-July 2006 that of 500 respondents in Semarang there were 111 people (22%) who had done petting and 31 (6.2%) who had carried out intercourse (Dirjen P2PL Kemenkes RI, 2011).

The premarital sexual behavior has negative effects psychologically, socially and physiologically. The psychological effects relate to a sense of angry, fear, worry, depression, inferiority, guilty feeling and transgression. Moreover, the social effects that an adolescent will suffer include expelled feeling and drop out. Specifically an adolescent girl undergoes the changing role as a mother. Finally, the physiological effects cover unintended pregnancy, abortion and sexual infection diseases in adolescents (Potter & Perry, 2010).

Some researches confirm that HIV and other sexual infection diseases can occur due to the premarital sexual behavior (South & Trent, 2010; Asaolu,Gunn, Center, dan Koss, et al2016). With total sample of 380 adolescents with the age group of 18–24 years, Azinar's research (2013) found that 12.1% adolescents had the risky premarital sexual behavior with unintended pregnancy (KTD). The premarital sexual behavior contributes adolescent health problems every year. There are 210 million adolescent girls who suffer unintended pregnancy throughout the world, and of the number 46 million adolescents choose abortion. Due to the abortion, 70,000 adolescents died and four million adolescents experienced pain and disability. In Southeast Asian countries, there are 4.2 million abortion

per year. Of the number, it is estimated that 750,000–1,500,000 abortion cases occur in Indonesia. Due to the abortion, 2,500 adolescent girls died (WHO, 2011). From the interview results, the premarital sexual behavior was found two adolescent girls who chose abortion in Makassar for unintended pregnancy (Ayatollah, 2014). Moreover, many adolescent girls are infected with HIV/AIDS in South Sulawesi, and the number rises every year. It can be shown from the research of Ramadhani, Aminuddin, & Bahar (2013). The research showed that there were 22 districts/cities (91.7%) in South Sulawesi Province including Gowa District under the endemic HIV/AIDS. There were 7,147 HIV/AIDS cases in South Sulawesi Province until September 2013. Average HIV/AIDS suffer includes the productive age with the status of school-age children and workers. There were 63 HIV/AIDS cases in Gowa District (Badwi, Gafur & Munadhir, 2016). Based on the above research results, it can be known that the premarital sexual behavior causes abortion, unintended pregnancy, death, the increased risk of HIV/AIDS incidence as well as sexual crime to adolescents (Tueka, 2014).

The factors that influence the premarital sexual behavior are among others gender, religious norms and household norms (Browning, Leventhal, & Brooks, 2004). Norviatin (2014) states that the status and frequency of dating in adolescents (Nursal, 2008) can influence the premarital sexual behavior in adolescents. Various researches show that the origin of school influences the risky sexual behavior in adolescents (Ryu,et al, 2007; Amoateng, Kalule, & Arkaah 2014; Mujayapura, 2014). Mujayapura's research showed that respondents from private schools (60%) had higher risk of sexual behavior than those from state school. Knowledge and attitude of adolescents significantly distribute to the increase of premarital sexual behavior in adolescents (Tang, et al 2011; Yip,et al, 2013; Norviatin, 2014). From the above researches, it indicates that the premarital sexual behavior in adolescents has close relation to adolescents' characteristics, and these include gender, the origin of school, status and frequency of dating, religious norms, household norms, knowledge and attitude. However, there is any limitation from the previous researches concerning the premarital sexual behavior in adolescents, i.e. generalization difficulty to be made from the previous researches for cultural development in other regions(Ryu, Kim, & Kwon, 2007; Oladipupo & Viatonu, 2014).

Wang & Davidson (2006) state that the premarital sexual behavior can occur in relation to pornography. Adolescents can access pornography through smartphone easily. Based on the research of Mariani & Bachtiar (2010) with total sample of 1,415 respondents from 36 classes in Mataram, it showed that 91% of the students had been exposed to pornography through smartphone. Pornography has impact and it stimulates adolescents to make sexual activities (Hartati, 2016). Moreover, the adolescents who are exposed to pornography through smartphone have a 4.3 times greater likelihood to make the premarital sexual behavior if compared to those who are not exposed to pornographic media (Ruhyandi, 2013). The research results get support from Azinar's research (2013). With total sample of 380 students, it showed that 12.1% of the students who were exposed to pornography did premarital sexual behavior and it had risk of unintended pregnancy (KTD).

From some researches in South Africa, Chicago, Hong Kong, Taiwan, Shanghai, Taipei, Hanoi and Indonesia, it indicates some factors in relation to premarital sexual behavior. However, the factors has close relations with culture that develops in the related regions so that it is difficult to make generalization from the previous research results in relation to culture that develops in other regions (Ryu, Kim, & Kwon, 2007; Oladipupo & Viatonu, 2014). To know further about premarital sexual behavior in adolescents in Gowa District, it will consider culture in Makassar tribe in Gowa District such as adolescents' behavior with the status of dating who dare to live together and get married in religious way through the traditional way of anyyala (elopement) with the reason that they do not get the content

of their two parents or other reason such as premarital pregnancy (Saleh, 2014).

Finally, there is no publication of a research on premarital sexual behavior in Gowa District so that it becomes consideration to see what factors in relation to the incidence of premarital sexual behavior with the title of relationship on adolescents' characteristics and smartphone use and premarital sexual behavior in high schools in Gowa District very important to be studied.

Method

The research design in this study uses cross sectional design. The case group in this research is adolescents with the status of students who go to school at high schools in Gowa District. The research was conducted in Gowa District located in the South of South Sulawesi Province which borders with seven (7) districts/cities, i.e. in the north it borders with Makassar City. Total territory of Gowa District reaches 1,883.33 square kilometers or the same as 3.01% of total land area in South Sulawesi Province. Gowa District's territory is divided into 18 sub-districts and 167 and 726 villages/ administrative villages.Total population in Gowa District amounts to 691,309 people. Population in the research coves high school students in the territory of Gowa District, South Sulawesi. Total population reaches 16,466 students from 92 high schools. The sample from the population was decided with probability cluster sampling. The sampling was carried out with the division of Gowa District into two regions, i.e. low and high area. Moreover, the ninety two high schools were randomized in a kind of drawing straws. As a result, each population member had tag number at first appropriate to total population of twenty two high schools. Moreover, the researchers selected 15 high schools. Total number of samples could be plotted with the consideration of sample measurement suggested by Roscoe in (Sugiyono, 2014), i.e. the feasible sample in a research with total number of 30–500 respondents. Total students in each school was directly sent a letter from UPT P2T BKPMD South Sulawesi Province. Finally, the inclusive criteria were students who have smartphone.

There are two instruments in this research. The first instrument in this research referred to Mujayapura's research (2014) on the relationships of adolescents' characteristics and the role of peer group, and premarital sexual behavior in high school students (SMA and SMK) in Semper Timur Village Administrative, Jakarta Utara. The valid instrument from Mujaypura's research consisted of gender, the status and frequency of dating, the origin of school, religious norms (the reliability test results of 0.791, R value (0.397–0.678), household norms (the reliability test results of 0.856,R value (0.430–0.893), knowledge (the reliability test results of 0.738, R value of 0.362–0.514), andpremarital sexual behavior (the reliability test results of 0.844, R value of 0.483–0.763) that had been tested in high school students in Jakarta Province.Moreover, the reference used in the instrument design was among others from Tomey, (2006), Theory of Planned Behavior (TPB) used to explain the relationship of beliefs, attitude, intention and a behavior (Ajzen, 2012). The instrument of smartphone use based on the reference, i.e. Uses and Gratification Theoriesfrom Bungin, (2006); Katz, Gurevitch, and Hazz, (2000); Wang & Davidson, (2006); Widaningsih, (2008); Tartari, (2015); Mariani & Bachtiar, (2010); Currie, (2013); Ruhyandi, (2013); Tadesse and Yakob, (2015); Hartati, (2016) that contained 18 points on perception and behavior in the use of smartphone consisting of negative and positive statements with the indicators of using applications on smartphone. The research's instrument content validity test were conducted by two scholars in this field, i.e. the First Academic (Pembimbing I) Adviser and Second Academic Adviser as the efforts to get the instrument content validity. The researchers had carried out validity and reliability testing before the instrumentswere used as the measurement tool in the research. Face validity and test validity was conducted with Product Moment Pearson's Test and reliability used Alpha Cronbach Test in 30 respondents in SMK 1 Sungguminasa. The

respondents did not include the research sample. The instrument validity test results indicated Alpha Cronbach's value > 0.60, and it meant that all research instruments were stated reliable (Anastasia and Urbina, 1997 in Dharma, 2011). Finally, the data of Chi Suqare Test were analyzed with multivariate logistic regression for the sample phases.

Result

Adolescents' Characteristics, smartphoneuse and premarital sexual behavior

The respondents' characteristics studied in the research consist of gender, frequency and status of dating, religious norms, household norms and knowledge. These are presented in the tables of frequency and precentage. The distribution of adolescents' characteristics, smartphone use and premarital sexual behavior can be shown in the following table clearly.

Table 1 indicates that most of the respondents come from private schools (65.8%), female (53.4%), their dating is more than one (77.2%), 58.8% of the respondents remain have the existing status of dating right now. Based on the religious norms, 59.8% of the respondents admit to have low devout, 51.4% of the respondents are untight in the implementaton of household norms. Based on the smartphone use, 61.0% of the respondents uses smartphone with the consideration of duration, applications and utilization.

Relationships of adolescents' characteristics, smartphone use and premarital sexual behavior

The bivariate analysis in this research

Table 1 Frequency Distribution and Percentage of Adolescents' Characteristics, Smartphone Use and Premarital Sexual Behavior (N=500)

Variables	Categories	f	%
Gender	Male	233	46.6
	female	267	53.4
Origin of School	State school	171	34.2
	Private school	329	65.8
Frequency of boyfriend change	One	114	22.8
	More than one	386	77.2
Status of dating	No	206	41.2
	yes	294	58.8
Religious norms	Devout	201	40.2
	Undevout	299	59.8
Household norms	Tight	243	48.6
	Untight	257	51.4
Smartphone use	No	195	39.0
	Yes	305	61.0
Knowledge	Low	398	79.6
	High	102	20.4
Premarital sexual behavior	Risky	330	66.0
	Unrisky	170	34.0

Table 2 Relationship of Adolescents' Characteristics, Smartphone Use and Premarital Sexual Behavior (N=500)

Variables	Risky		Unrisky		p Value
	f	%	f	%	
Gender					
Men	150	30.0	83	16.6	0.474
Women	180	36.0	87	17.4	
Origin of School					
State School	103	20.6	68	13.6	0.059
Private School	227	45.4	102	20.4	
Frequency of Boyfriend Change					
One	59	11.8	55	11.0	0.000
More than one	271	54.2	115	23.0	
Status of dating					
No	67	13.4	139	27.8	0.000
Yes	263	52.6	31	6.2	
Religious Norms					
Devout	92	18.4	109	21.8	0.000
Undevout	238	47.6	61	12.2	
Household Norms					
Tight	126	25.2	117	23.4	0.000
Untight	204	40.8	53	10.6	
Knowledge					
Low	311	62.2	87	17.4	0.000
High	19	3.8	83	16.6	
Smartphone use					
No	100	20.0	95	19.0	0.000
yes	230	46.0	75	15.0	

describes the relationship between dependent variable, i.e. premarital sexual behavior and the independent variables in this research, i.e. adolescents' characteristics and smartphone use.

Based on bivariate correlation analysis results in Table 2, it indicates that there is significant relationship between premarital sexual behavior and the frequency of dating (p value0.000), status of dating (p value0.000), religious norms (p value0.000), household norms (p value 0.000), knowledge (p value 0.000), and smartphone use (p value0.000). Moreover, the characteristic variables that consist of gender and the origin of school do not have significant relationship (p value >

Table 3 Selection Results of Bivariat Analysis To Be Analyzed in Multivariate Analysis

No	Variables	p Value
1	Frequency of Boyfriend change	0.000
2	Status of Dating	0.000
3	Religious Norms	0.000

4	Household Norms	0.000
5	Knowledge	0.000
6	Smartphone Use	0.000

Table 4 Multivariate Analysis Relationship Results of Frequency of Boyfriend Change, Status of Dating, Religious Norms, Household Norms, Knowledge, Attitude and Smartphone Use and Premarital Sexual Behavior

Variables	Koef β	SE (B)	p value	OR (minimal-maximal)
Frequency of Boyfriend Change	-1.487	0.449	0.001	0.226 (0.94 - 0.545)
Status of Dating	1.149	0.519	0.027	3.155 (1.141 – 8.720)
Religious Norms	-1.203	0.344	0.000	0.300 (0.153 – 0.589)
Household Norms	-797	0.359	0.026	0.451 (0.223 - 0.910)
Knowledge	-3.724	0.547	0.000	0.024 (0.08 – 0.070)
Smartphone Use	1.276	0.508	0.012	3.583 (1.324 – 9.695)

* POR value calculated on the basis of logistic regression test

0.05).

Multivariate analysis to the relationship between adolescents' characteristics, smartphone use and premarital sexual behavior

The multivariate analysis comes from the development from bivariate analysis. In this research, the statistic test used in this study includes double logistic regression statistical test.

Based on the bivariate correlation analysis results to be analyzed with multivariate methods in Table 4, it indicates that the variables that meet requirements for the multivariate analysis consist of frequency of boyfriend change, status of dating, religious norms, household norms, knowledge, attitude and smartphone use.

Based on the multivariate analysis results from Table 4, it indicates that smartphone use OR 3.583 (1.324–9.695) is the most dominant factor towards premarital sexual behavior, the other factors consecutively include the status of dating OR 3.155(1.141–8.720), household norms OR 0.451 (0.223–0.910), religious norms OR 0.300 (0.153–0.589), frequency of boyfriend change OR 0.226 (0.94–0.545), knowledge OR 0.024 (0.08–0.070).

Discussion

Analysis to the relationship of adolescents' characteristics (gender, origin of school, frequency of boyfriend change, status of dating, religious norms, household norms and knowledge) and premarital sexual behavior

Adolescents are the next generation of a nation who have great potency if they have optimal quality appropriate to their growth and development. Adolescent problems frequently relate to changes in relation to physical, psychological and social change. The frequent and great problem that occursamong adolescents is premarital sexual behavior. The behavior conducted by adolescents or their couples before marriage is called premarital sexual behavior (Sarwono, 2016).

The effect of premarital sexual behavior in Gowa District can be shown in the number of HIV incidence. From the South Sulawesi Province data in 2010,it rose from 3,684 HIV/AIDS cases to 3,918 cases. Major causes of the high HIV/AIDS cases are free sex behavior and sexual relationship, and it reaches 60%.

Finally, there is alcohol drinking tradition or ballo and the anyyala tradition (elopement) in Gowa District. Adolescents and their parents accept the ballo tradition. For anyyala

tradition or (elopement), it occurs when a couple loves each other but does not get the consent of their parents or has been pregnant unintendedly. The research results indicate that there are more many adolescents with the risky sexual behavior in the district. It is the first step to uncover the causal factors associated with premarital sexual behavior in Gowa District.

Relationship of gender and premarital sexual behavior

The analysis results indicate that there is insignificant relationship between gender and premarital sexual behavior in adolescents (p value: 0.474). The research results differ from other researches from (Ubaidur, et al 2001; Aras, et al. 2007; Oljira, Berhane, & Worku, 2011 Rahyani, et al. 2012; Mujayapura, 2014). The researches indicate that there is significant relationship between gender and premarital sexual behavior. Gender is the biological differences between male and female since an individual is born. Decision in premarital sexual behavior closely relates to the individual characteristics, i.e. adolescence with the status of dating or other factors.

Gender is one of the predisposition factors an individual does some behaviors when he/she is getting older. A female grows faster when entering 10 years old while for a male it occurs in 14 years old. Early maturity of reproductive organs in adolescents occurs together with psychosexual maturity when an individual begins to have interest on the opposite gender in a kind of fostering a love relationship or making dating (Potter & Perry, 2010). Male and female can engage in premarital sexual behavior for various factors. The research of Li, Huang, Xu, Cai, Huang & Ye, (2013) indicates that the percentage of students who has had sexual relations in the last three (3) months, i.e. 7% male and 5.1% female consecutively and 49.4% students having sexual relations with two or more spouses.

This research differs from some research results that indicate that there is a significant relationship between gender and premarital sexual behavior with (p value 0.002). The research results in Bangladesh, and Ethiopia are similar that a significant proportion of sexual relationship is mostly from adolescent boys (Ubaidur, et al 2001; Aras, et al. 2007; Oljira, Berhane, & Worku, 2011 Rahyani, et al. 2012; Mujayapura, 2014). Moreover, from ten high schools it is shown that that students who have had sexual intercourse in the last three (3) months are 7% male and 5.1% female consecutively and 49.4% have sexual relationship with two or more spouses (Li, Huang, Xu, Cai, Huang & Ye, 2013). The majority of adolescent girls engaged in the risky sexual practices has spouses engaged in the risky sexual practices as well (Cole., Logan., & Shannon, (2007).

Changes due to puberty frequently cause many maladaptive behaviors. The research from Downing & Bellis (2009) shows that 45.6% of menarche girls ≤ 12 years old and 53.3% of boys categorized puberty ≤ 11 years old indicate that puberty at an earlier age can be predicted to have sexual behavior and can have sexual intercourse around the age of <16 years old. Therefore, it can be concluded that adolescent girls and boys have high risk premarital sexual behavior. It is appropriate to a research that shows that adolescent boys and girls when dating more likely engage in premarital sexual behavior (Gevers, Mathews, Cupp, Russell, & Jewkes, 2013). In general, adolescent boys and girls see intimacy, sexual pleasure and social status as the primary goal in a romantic relationship (Randall & Byers, 2003).

It is likely that the opinion of these researchers relates to culture in Makassar tribal community in Gowa District, such as adolescent behavior with dating status whether they are goys or girls who have the courage to live together and get religious marriage with the anyyala tradition (elopement) because they do not get the consent of their parents or other reasons such as unintended premarital pregnancy.

Moreover, this research results show that gender has no relationship between premarital sexual behavior in adolescents. It can occur because there are more many adolescent girl respondents if compared to adolescent boys and the difference of the risky premarital sexual behavior only amounts to 6% between

adolescent boys and girls. Likewise in the research of Maulina & Kuntarto, (2015) it states that there is no relationship between gender and student attitudes about sexual behavior because it gets influence from the number of adolescent girl respondents if compared to adolescent boy respondents. Based on Notobroto's research (2013) it also states that there is no relationship between gender and sexual behavior because the number of adolescent boys who engage in non-intimate sexual behavior is the same as the number of adolescent girls despite the intimate sexual behavior in adolescent boys is higher than in adolescent girls.

In this research, however, adolescent girls reach 6 percent and it is higher than in adolescent boys. This can relate to different patterns that likely occur for the influence of race, genetics, opinion, motivation and culture in a region (Sasaki & Kameoka, 2009., Zietsch, Verweij, Bailey, Wright, et al. 2010., Jong, et al. 2015., Ott, Millstein , et al (2006). In general, adolescent boys and girls see intimacy, sexual pleasure and social status as the major goal in a romantic relationship (Randall & Byers, 2003). Moreover, it relates to local culture in the Makassar tribal community in Gowa District, i.e. adolescent behavior with the status of dating whether they are boys or girls has the courage to live together and get religious marriage through the anyyala tradition (elopement) with the reason of not getting the consent of their parents or other reason, i.e. extramarital pregnancy (Saleh, 2014).

Relationship between the origin of school and adolescents' sexual behavior

Based on the bivariate analysis results, the respondents with the risky sexual behavior come from private schools (45.4%). The research results are the same as the research of Mujayapura, (2014) that indicates that the respondents (60%) from the private schools have premarital sexual behavior if compared to those from state schools. The bivariate analysis results in this research indicate that there is no significant relationship between the respondents' origin of school and adolescent sexual behavior (p value: 0.059). It is in parallel with the research of Widodo, (2009) that states that there is no relationship between the spouses' origin of school and free sex behavior in adolescents (p=0.213). Moreover, Firmiana, Prasetya, & Imawati, (2014) also show that there is no relationship between religiosity and dating behavior that tends to premarital sexual behavior in the three origin types of school. Furthermore, another research also proves that premarital sexual behavior occurs in adolescents despite they have the background of school with religious education if compared to the others (Khairunnisa, 2013).

The research results are not in parallel with the researches that state that the adolescents' origin of school has influence to premarital sexual behavior (Ryu,et al 2007; Amoateng, Kalule, & Arkaah 2014). It can occur despite school is the second environment after household for adolescents. However, schools indirectly have role in the establishment of adolescents' health behavior including adolescents sexual behavior. Accoarding to some researches, these state that the significant relationship between the location of school and premarital sexual behavior in the multivariate factors that influence adolescents is different social interaction, leasure time activities, attitude to sexuality and the influence of peers (Dewi, 2009., Fletcher, 2007), and the respondents in this research have negative attitude (65.0%) with the risky sexual behavior.

It gets strong support from Sarwono's statement, (2016) that school is not again the one environment for adolescents that can influence their behavior because there are supermarket, amusement parks and friends' houses become adolescent choice during school hours. Adolescents frequently build interaction with their peers specifically, such as carrying out joint activity or making a gang (Ali, Asrori, 2014). Adolescence is the period when children begin to allocate much of their time together with their peers (Haas., Schaefer.,& Kornienko, (2010). Hauser & Obeng (2015) state that a significant factor towards sexual behavior is their peers. Otherwise, Suparmi & Isfandari, (2016) state that adolescents who have peers never do the

risky premarital sex and it is 11 times greater than those who do premarital sex. Another research also states that adolescents who have girlfriends are the significant environmental factors to occur premarital sexual behavior (Ryu, Kim, Kyunghee, & Kwon, 2007).

Researchers conclude that the origin of school indirectly has role in the establishment of adolescent sexual behavior. Moreover, social interaction at school can get influence from the frequency of dating and race. The role of nurses as case finders has to be able to identify factors that can change adolescents' health status at school or home so that they can know health problems that can appear from adolescents' risky behavior in relation to free sex behavior, unintended pregnancy and the infection of sexual diseases, such as HIV/AIDS(Allender, et al, 2010).

Relationship between frequency of dating and adolescent sexual behavior

According to Jean Piaget (Bybee and Sund, 1982) in Ali., Asrori, (2014) states adolescent interaction is very risky and potentially it can make trouble. Their social changes relate to their early dating, hanging out with their peers at school, out of their households and social environment so that they tend to have risk with negative behavior and otherwise, it can trigger health problems in public (Vingilis, Wade, & Seeley, 2002; Sarwono, 2011; Ali & Asrori, 2012; Stuart 2013).

The frequency of girlfriend change can be a factor in relation to the incidence of premarital sexual behavior. It is also found in the research of Mujayapura (2014). He states that there is a correlation between frequency of dating and sexual behavior (p = 0.026). Based on research conducted by Nursal (2008) it finds that factors related to sexual behavior in high school students in Padang have more than three girlfriends and less than 5 hours per week and more than 21 hours / week. Finally, the research of Kazaura & Masatu (2009) shows that adolescents with the age range of 10-19 year old in Tanzania are active in having sex with multiple partners and the number reaches about 32%.

The results of the logistic regression analysis in this research show that frequency of dating with more than one time has an effect on sexual behavior with POR 0.226 (95% CI: 0.94 - 0.545). Moreover, the research of Suparmi & Isfandari (2016) states that adolescent boys who have girlfriends have friends who have every had premarital sex. The risk reaches 11 times greathan to carry out premarital sex.

This researches conclude that dating adolescents frequently can terminate their commitment because there is any difference of viewpoint and attitude in their relationship. They will make relationship with other spouses and it will give them more comfortable. They consider their spouses as a way of approaching the opposite gender to know similarity and perpetuate the attraction so that they can fall into the risky sexual behavior.

The relationship of religious norms and adolescents' sexual behavior

The univariate analysis results on the relationship of religious norms and adolescent sexual behavior indicate that the devout respondents reach 40.2% if compared to those with low devout (59.8%) when they carry out their religious norms. From the bivariate analysis results, moreover, the respondents who are low devout when carrying out their religious norms tend to carry out risky sexual behavior (47.6%). The religious norm relates to premarital sexual behavior with (p value : 0.0000). It is in parallel with the research of Hauser and Obeng (2015) in United States from some religions testing the influence of religiosity towards premarital sexual behavior. It indicates that the decision of making premarital sexual behavior gets influence from their parents, peers, religion and media. Religiosity is proved to have significant relationship to sexual behavior (Agardh, Tumwine, & Ostergren, 2011; Khairunnisa, 2013). Fequency to carry out religious activities and feel having religion are significant predictor of premarital sexual behavior (Penhollow, Young, & Denny, 2005). Moreover, McPherson, et al (2013) in their research also state that the frequent presence of religious services can be related to sexual health behavior and it has more positive influence. The results of logistic regression analysis in this research find that

adolescents who are low devout will be risky to carry out premarital sexual behavior and it amounts to 0.300 if compared to those who are devout adolescents.

Researchers conclude that religiosity activities at home, school and public have significantly important role in establishing adolescents' religious values. The condition is appropriate to the research results that adolescents who are low devout when they carry out their religious norms have greater trend in their risky sexual behavior if compared to the devout adolescents when they carry out their religious norms. The findings strengthen the viewpoint that lack of parents' supervision and religious control increase the possibility of premarital sexual behavior occurrence in adolescents.

Relationships of household norms and students' sexual behavior

Other researchers find that the factor that postpones the first sexual relationship in adolescent boys and girls relates to their parents. They disapprove their children's sexual behavior and carry out monitoring and control (Nagamatsu, Miyuki, Saito, Hisako and Sato, 2008). Moreover, their pattern of monitoring power through their children's attitude reaches 10.6% and the intention of sexual behavior 9.28% (Suwarni, 2009). Parents are the family control that can influence adolescents' premarital sexual behavior. However, Aseltine, Robert, Doucet and Schilling, (2010) find that adolescent in their early age who live with divorced parents significanly is risky to carry out sexual behavior. According to Mmari, Kalamar, Brahmbhatt and Venables (2016), it indicates that adolescent girls who grow up in their relatives do not give information about sexual relationship if compared to those who are growing up in the hand of their biological parents.

Kornreich, Hearn, Rodriguez, dan O'Sullivan (2003) indicate that having siblings or older brothers generally has effect on adolescent girls in their sexual interaction. However, Li, Chen, Cao, Li, Zuo and Yan (2013) in China find that of 4,769 female students who do not have siblings, it indicates 41% higher to approve premarital sexual behavior with more than one spouse.

Researchers conclude that households have great responsibility in growing up moral values since their children's early age because moral values is a part of substance in the developmengt of adolscent personality. However, in their growth and development they frequently neglect the values approved in their families. On the contrary, they follow new norms and values obtained out of their households such as dating activities out of their home.

Relationship of knowledge and premarital sexual behavior

The further analysis results from the research shows that adolescent knowledge about sexual behavior remains low, and from the data found in the research there are 102 respondents (20.4%) who have high knowledge about sexual behavior and the others totaling 311 respondents (62.2%) have low knowledge.

The research results are the same as the research of Chi, Yu, &Winter, (2012). Their research states that there is any relationship between the knowledge of reproductive health and sexual behavior. Sexual behavior among students in China frequently occurs because they have limited access to the sex-related knowledge. The lack of adolescent knowledge about reproductive health makes them difficult to refuse free sex so that it increases the possibility of being exposed to sexually transmitted diseases and extramarital pregnancy (BKKBN, 2010). Finally, Zelnik and Kim (1982) in Sarwono, 2016 state that when adolescents have never receive sex education, they tend to experience more unintended pregnancy.

The research from Wong (2012) states that the knowledge of reproductive health and attitude closely relates to religious values and differences in cultural norms around sexual problems. The knowledge of reproductive health is definitely important for adolescents to reject the invitation of conducting sexual behavior. Therefore, Gao, Yu, Ahmed, Zhu, et al (2011) in their mulitivariate analysis show that sexual knowledge significantly relates to premarital sexual behavior. In this research it is shown that the adolescents'

low knowledge will influence them to the risky sexual behavior and it is 0.024 times higher than those who have high knowledge. These findings indicate that adolescents have to be prepared for negotiations on sexual problems and decision making from their early age through comprehensive and accessible education and health services as stated by Chevers. Mathews., Cupp., Russell, & Jewkes, (2013).

Researchers argue that adolescent knowledge can get influence from experience, age, culture, and relationships. Immature personality and unstable emotion easily affect them to negative things like premarital sexual behavior. These findings indicate that adolescents have to be prepared for negotiations on sexual problems and decision making from their early age through comprehensive and accessible education and health services (Gevers, Mathews, Cupp, Russell, & Jewkes, 2013). Communication between parents and their children is definitely important in inhibiting the risky premarital sexual behavior in adolescents (Amoateng, et al 2014; Bazargan and West, 2006).

The knowledge of reproductive health that adolescents adopt from proper sources can become the factor of establishing strong basis when they make attitudes on all sexual behaviors towards their maturity age (Notoatmodjo, 2007). The research of Bazargan and West (2006) states that the intervention program which focuses on knowledge does not change adolescent intention to involve in sexual activities. The problems of risky premarital sexual behavior in adolescents is very worrying because the ability of self efficacy to avoid free sex and HIV/AIDS remains low ((Muflih, & Setiawan, 2017). The intervention program has to focus on stimulating adolsecents to delay their sexual activity if they can reduce the pressure of their peers and build their self efficacy through increasing their motivation and behavioral skill in appropriate to culture.

Relationship of SmartphoneUse and Premarital Sexual Behavior

The univariate analysis results shows that the respondents (61.0%) who mostly use smartphone for utilization, duration and applications that they use frequently and from the bivariate analysis it causes more risky for sexual behavior (46.0%) with (P value: 0.000). This condition shows that adolescence age spend much time for smartphone use. The biggest potential technology users are adolescents. Based on the data of (Ministry of Communication and Information, 2016),Internet users in Indonesia at this time had reached 82 million people in 2016, and it occupied the sixth rank in the world. Of the number, eighty percent of the Internet users are adolescents with the age range of 15-19 years old for Facebook users. In this matter, Indonesia occupied the fourth rank in the world.

The results of logistic regression analysis show that the most influential factor related to premarital sexual behavior in high school students in Gowa District, South Sulawesi Province is smartphone use with OR = 3.583. The research results is parallel with the research conducted by Currie (2013). The last research involves 1,800 high school students in Los Angeles and it shows that adolescents that use smartphones to accessing Internet are more likely to get effect of premarital sexual behavior. This condition shows that the greater the adolescents for smartphone use the more many adolescents tend to have risky sexual behavior. The research results are parallel with the research of Amaliyasari & Puspitasari (2008) that states that information of sexual media greatly influences the respondents' sexual behavior, namely the possibility of the respondents who obtains information about sexual behavior will be unreasonable, i.e. 4,424 times greater than those who never obtain sexual information.

Tartari (2015) shows that adolescents spend much time on social media pages every day. The adolescents have risk to be exposed to Facebook depression, cyberbullying and sexual abuse in online way. Adolescent sexual activity is at risk because their lifestyle that useshandphone and Internet cafes does not make them to get proper knowledge but a negative information source of sexual behavior. In the research of Mariani & Bachtiar (2010) that involves 36 classes with total sample of 1,415 respondents in Mataram, the research results show that

about 91 percent of the students have been exposed to pornographic material via smartphones. This research indicates that the lifestyle of adolescents greatly influence the establishment of sexual behavior patterns.

Smartphone use has negative influence. Choi, et al (2016) shows a strong relationship between the use of dating applications and premarital sexual behavior. Currie (2013) states that the research conducted to 1,800 high school students in public schools in Los Angeles, United Statesshows that when adolescents use smartphones to accessingInternet, they are more likely two times higher to have sex with someone they meet online. Pornography has an impact so that they want to engage in sexual activities (Hartati, 2016). Furthermore, when adolescents are exposed to pornography through smartphones, they have 4.3 times opportunity to performing premarital sexual behavior if compared to those who are not exposed to pornographic media (Ruhyandi, 2013). In the research of Tadesse and Yakob (2015), it also states that 503 respondents (70.3%) of the research samples have sexual relations after they watch pornography.

Based on this research, the researchers conclude that smartphone use has a significant effect in increasing adolescent knowledge, attitude and sexual activity. In other words, smartphone use has a positive and negative effect on adolescents' life. When adolescents get negative influence from smartphone use, they will have difficulty to refusing not to imitate the behavior observed from the smartphone use or conducting self-control in their peer interaction and improving their interaction quality in the building of their interpersonal relationships. In addition, the adolescents are exposed to pornography through smartphones, they will have potential to engage in premarital sexual behavior if compared to those who are not exposed to pornographic media. The role of parents is very important because they will provide guidance in technology uses. Therefore, it can have a good impact on their children.

Conclusion

This research concludes that there is significant relationship between the independent variables of multiple dating frequency, dating status, religious norms, household norms, knowledge and the uses of smartphone and the variable of the premarital sexual behavior among high school students in Gowa District, South Sulawei. Of the six independent variables, the dominant variable with premarital sexual behavior is the uses of smartphone. It was based on the multivariate logistic regression analysis test among adolescents who use smartphone. The opportunity reaches 3.583 times for the premarital sexual behavior if compared to those who do not use smartphone.

The use of smartphone is the factor that closely relates to premarital sexual behavior, and it indicates that adolescents' control and education particularly for the use of smartphone conducted by teachers at school and parents at home are very important to be upgraded. It is the school-based health education program that can focus on the control of smartphone use and skill training. The program is important because adolescents can avoid the risky premarital sexual behavior. Moreover, the role of parents is also important in the guidance and use of smartphone so that it not only gives negative effects to the adolescent but also positive ones definitely. Therefore, the use of smartphone can increase creativity and prestige among adolescents as well.

A nurse can have important role in preventingpremaritalsexualbehavioratschool through the implementation of adolescence health cadres with peer counselor and peer education approach. A counselor nurse has to be able to give a variety of reproduction health information that includes adolescent development, adolescent sexual behavior, the effects of premarital sexual behavior in adolescents and reproduction health services that are usually used at school and society. As an educator, the nurses become a source of information about adolescent reproduction health and they give how to solve issues and alternatives that the adolescent can use.

The school-based health education program focus on control of smartphone uses and skill training among adolescents so that they can avoid risky premarital sexual behavior. Adolescence intervention

study should be carried out particularly concerning adolescents' usesof smartphone. The information technology development not only give negative impact to adolescents such as premarital sexual behavior but also it has greater positive effects such as creativity, prestige among adolescents. Moreover, the role of parents is very important when they give supervision and guidance for the uses of smartphone among their children. Therefore, it has positive effects as well.

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Comparison of Central Venous Pressure (Cvp) Score Among Patients on Mechanical Ventilator With Head of Bed (Hob) Elevation 30O; Neutral, Right, and Left Side Positions

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Abstract

Early mobilization is important for critical patients to improve cough reflexes, eliminate bronchial secretions, facilitate work of mucociliary drainage muscles, and to prevent associated pneumonia ventilators and pressure sores. However, at the same time the patient often experiences vital signs change due to fluctuating conditions. Central Venous Pressure (CVP) measurement is oftenly needed to monitor central circulatory system. Unfortunately, in the clinical setting, the patient's position must be changed first in a 30o neutral head of bed (HoB) position rather than left or right side HoB position. This study aims to examine the differences in of CVP score among patients on mechanical ventilation at HoB position elevation 30o in a neutral, right side, and left side position. This quantitative comparative study involved 24 subjects who were recruited consecutively. Data were analyzed using ANOVA. The results showed that the mean CVP value at neutral HoB position elevation was 13.5 ± 3.96, right sight HoB elevation was 12.8 ± 4.16, and left side HoB elevation was 14.4 ± 4.17. There was a significant difference ($p < 0.05$) among those three positions. Post hoc analysis test found the HoB position 30o neutral vs left side possition was higher and signifficantly difference with HoB elevation 30o neutral vs right side positions ($p<0.05$). This study suggested nurses need to consider the change of CVP values while changing patiens' position of HoB elevation 30o neutral, right side, and left side positions. Athough there was statistically difference among three positions, in fact, the value difference was less than 1 cmH2O which clinically did not see any differences.

Keywords: Central venous pressure, HoB elevation, Mechanical ventilation

Introduction

Intensive care is one of the nursing services for patients with acute or chronic illnesses in emergency situations, critical who require monitoring of vital functions, more specifically intensive therapy and immediate action that cannot be given in the general care room (Linda, Kathleen & Mary, 2010). Hemodynamic disorders are one reason patients need intensive care unit (ICU). One of the hemodynamic assessments that are often carried out in the ICU is the measurement of right atrial pressure or central venous pressure/ CVP.

Right atrial pressure data helps support the diagnosis, knows the patient's condition and provides appropriate therapy. The current CVP is an indicator that is still reliable in terms of estimating the intravascular volume adequacy (Izzakovic, 2008). The CVP measurement results in interpreting the pressure of the right atrium which shows blood volume status, heart effectiveness as a pump, and vascular tone which indirectly describes the initial right heart load or right ventricular pressure at the end of the diastole from the venous return. CVP measurement is carried out if the patient has hypotension that does not respond to basic clinical management, ongoing hypovolemia and / or the patient needs an inotropic infusion that can be measured at any time or incidentally (Cole, 2007; Scales & Fernandes, 2010). Normal CVP values using a manometer system are 5–10 cmH2O (Cole, 2007).

The recommended position for CVP measurement is the position of head of bed (HoB) elevation 30o. At the HoB elevation 30o position, the blood flow pressure gradient from the inferior vena cava leading to the right atrium is able to deal with vascular resistance and right atrial pressure, thereby increasing venous return and increasing right ventricular filling (preload), leading to increased stroke volume and cardiac output. The gravitational force of the patient's position significantly affects venous return, cardiac output, and venous pressure (Kim & Sohng, 2006). However, changes in right or left side position in critical patients with mechanical ventilation are important as early mobilization to prevent secondary complications such as nosocomial pneumonia infections, thombophlebitis, muscle atrophy, accumulation of respiratory tract secretions, reducing pain on the paralyzed side, facilitating circulation blood, contractures, joint stiffness and pressure sores (Yemima, 2007)

Positioning side to side can prevent pressure sores is also very effective in increasing the process of removing bronchial secretions on the basis of gravitational effects. This stimulates the secretion to move from one or more lung segments to the airway where the secretions can come out by mouth by coughing reflex or by mechanical aspiration and can increase the strength of the diaphragmatic breathing muscles so that breathing can be adequate and the process of weaning off the ventilator can be faster and the risk of pneumonia can be minimized (Kathleen, 2010).

However, changes in position can cause some negative potential effect for critical patients. When the patient is in the right side position, the return of blood from the inferior part through the inferior vena cava (IVC) experiences kinking because the close IVC to the right facilitates suppression by the kidney, and anatomically located the heart in the left hemithorax, when tilted to the right, the left side of the heart slightly pushes to the right which causes a decrease in the diameter of the right atrial space, so that the blood volume / venous return decreases resulting in a greater decrease in blood pressure compared to the lateral left position (Hazebroek & Bonjer, 2011) This has the potential to affect the value of the CVP.

Apart from the above, the change in position is not too much a concern for nurses in treating CVC-installed patients and mechanical ventilation to evaluate the difference in CVP values. Observations of researchers during intensive clinical learning, all critically ill patients with hemodynamics were stable either installed with mechanical ventilation and CVC or not, in their care they were transferred to the position every 2 hours as a form of early mobilization. During the transfer of position, patients often experience changes or decrease in vital signs because of their fluctuating conditions and immediate monitoring of CVP values to monitor intravascular volume adequacy, so

that the fluid challenge test in determining the appropriate action is aggressive and rapid resuscitation or requires additional drugs. However, so far the patient's position to obtain a CVP value must be changed first in a neutral HoB elevation position 30o. This allows that the measurement of CVP values must be immediately carried out by health workers, especially nurses at that time without having to change their position first so that the CVP value can be known and analyzed to determine the action or therapy more quickly and precisely so that the impact of changes and vital signs and deterioration of the patient's condition can be minimized and even prevented.

Quick, short and sudden changes in position can increase oxygen consumption, cause changes in the hemodynamic status of patients who are unstable and time-consuming and health workers in treating critical patients, especially patients with myocardial infarction who are given supination, pronation, right lateral, and left lateral positions (Siepe, et. al. 2005). According to Kozier & Erb, (2009), a change in position that is too fast causes a decrease in venous return, a decrease in the mean arterial pressure (MAP) and central venous pressure which results in a decrease in cardiac output. The purpose of this study was to examine the differences of CVP scores among patients with HoB elevation 30o in a neutral, right side, and left side position.

Method

This is a quantitative comparative study. The population of the study was all patients admitted in the General Intensive Care Unit (GICU) in a teaching hospital of West Java Province. Twenty-four patients were recruited consecutively with the inclusion criteria; having stable hemodynamic conditions and their aged between 18 to 65 years. Ethical approval was obtained from the Health Research Ethic Committee Faculty of Medicine Universitas Padjadjaran with the number 194/UN6.C1.3.2/KEPK/PN/2015. The researcher measured the CVP values, then validated by a senior nurse who incharge in the shift time as data taken. CVP measurements were started at the neutral HoB elevation 30o position for ten minutes, then continued at the right and left side positions. CVP was measured using a manometer and recorded on the measurement sheet. Data were checked for normally by using Shapiro Wilk test. Data were normally distributed ($p = 0.785$). Anova test was performed to examine the differences among three data means.

Result

The characteristics of the subjects included age, gender, and disease group were presented in the table 1 below.

Table 1 Characteristics of the Subjects (n= 24)

Characteristics		Frequency (f)	Percentage (%)
Age (years)	18-40	10	41.7
	41-60	11	45.8
	> 60	3	12.5
Gender	Male	13	54.2
	Female	11	45.8
Disease group	Internal disease	3	12.5
	Digestive Surgery	5	20.8
	Neurosurgery	3	12.5
	Neurology	5	20.8
	Obstetrics	5	20.8
	Cardiology	2	8.3
	Surgical Oncology	1	4.2

Based on the mechanical ventilation mode used, almost half of the subjects used either CPAP or SIMV mode. More than half of the subjects used PEEP of 5 CmH2O. All subjects' heart rate within a normal range of 60-100 times / minute. Half of the subjects had MAP between 70-90 mmHg as presented in the table 2.

The subjects' CVP value measured in the position of a neutral HoB elevation 30o, right side, and left side HoB 30o positions. Most of the subjects showed their CVP values > 10 CmH2O in all three positions (Table 3).

Mean score of CVP values at HoB elevation 30o left side position was consider a the highest (14.4 ± 4.17) compare to the HoB

Table 2 Mode of Mechanical Ventilation, PEEP, and Hemodynamic Status of the Subjects (n= 24)

Use of Mechanical Ventilation		Frequency	(%)
Mode Ventilator	VC	1	4.2
	SIMV	10	41.7
	CPAP	11	45.8
	PS	2	8.3
PEEP (cmH2O)	5	15	62.5
	6-10	9	37.5
	11-15	0	0
Hemodynamic Status			
Heart Rate	< 60	0	0
	60-100	24	100
	> 100	0	0
Sistolik	< 100	0	0
	100-140	21	87.5
	> 140	3	12.5
Diastolik	< 70	11	45.8
	70-90	13	54.2
	90-110	0	0
MAP	< 70	2	8.3
	70-90	13	54.2
	> 90	9	37.5

Table 3 CVP Values at 30o Head of Bed (HoB) Elevation Neutral, Right Side, and Left Side Positions (n=24)

Measurement Position	CVP Value (CmH2O)						∑
	< 5		5-10		> 10		f
	f	%	f	%	f	%	%
HoB elevation 30° neutral	0	0	6	25	18	75	24(100)
HoB elevation 30° right side position	0	0	9	37.5	15	62.5	24(100)
HoB elevation 30° left side position	0	0	3	12.5	21	87.5	24(100)

Table 4 Mean Score of CVP Values among Head of Bed (HoB) Elevation 30^o Neutral Right, and Left Side Positions

Measurement Position	Mean ± SD (CmH2O)	p
HoB elevation 30^o neutral	13.5 ± 3.96	0.000
HoB elevation 30^o right side	12.8 ± 4.16	
HoB elevation 30^o left side	14.4 ± 4.17	

Table 5 Post Hoc Paired Wise Comparations CVP Value between Head of Bed (HoB) Elevation 30^o Neutral vs Right Positions and Neutral vs Left Side Positions

Measurement Position	CVP Value	
	Mean difference (cmH2O); IK 95%	p
HoB elevation 30^o: Neutral vs Right Side	0.69 (0.248-1.127)	0.004
HoB elevation 30^o: Neutral vs Left Side	0.85 (0.374-1.334)	

elevation 30o neutral and right side positions. ANOVA test showed there was signifficant diffecrence among means score of HoB elevation 30o neutral, right side, and left side position ($p < 0.05$) (Table 4). A post hoc analysis of Paired Wise Comparations was carried out to compare two mean difference, and the results showed there was signifficant difference between CVP values at positions of HoB elevation 30o (neutral vs right side) and HoB elevation 30o (neutral vs left side) ($p < 0.05$) (Table 5).

Discussion

The condition of critical patients in intensive care requires strict and accurate hemodynamic monitoring, such as the rise and fall of blood pressure that can change at any time which greatly affects or causes the shutdown of the functions of other body organs, and even patients who are treated intensively in a short time can be experiencing multiorgan dysfunction syndrome (MODS). The most common cause of MODS is a decrease in perfusion (Marik & Cavallazzi, 2013). Decreased perfusion is caused by a decrease in hemodynamics, one of which can be caused by a decrease in CVP values (Mulyati, Fatimah & Susilaningsih, 2012). CVP values can be decreased, one of which is caused by a hypovolemic fluid status disorder.

In table 3, it can be seen that the CVP value of the HoB elevation 30^o position is neutral or before a change in position is mostly above the value of 10 cmH2O. The value of CVP in critically ill patients tends to increase, this is one form of therapy in meeting the fluid needs of critical patients with the aim of maintaining intravascular fluid in preventing the occurrence of hypovolemia, shock and tissue hypoperfusion and worsening tissue damage (Marik & Cavallazzi, 2013). Patients with certain conditions to meet and maintain positive airway pressure need high PEEP and in this study, there were 9 respondents with the use of a 6-10 mmHg PEEP setting. CVP values measured in the HoB elevation 30^o neutral position tend to increase can also be caused by the use of PEEP between 6-10 mmHg, because an increase in PEEP significantly increases CVP values (Cao, Liu & Chen, 2008; Mulyati, Fatimah & Susilaningsih, 2012). Furthermore, Mulyati, et al., (2012) found that the mean difference in CVP value of PEEP 5 cmH2O to 10 cmH2O PEEP was 2 mmHg.

Theoretically, at the HoB elevation position 30^o the return flow of blood from the inferior part to the right atrium is very good. This is because vascular resistance and right atrial pressure are not too high, so venous return to the right atrium is quite good and right ventricular filling pressure (preload) increases, which ultimately increases stroke volume and cardiac output (Kim & Sohng, 2006) Changes in the position of neutral HoB elevation 30o laterally or tilted affect the backflow of blood leading to the heart. Cicolini et al. (2010) stated that the head up or HoB position had an effect on changes in blood pressure and central venous pressure. Different positions affect hemodynamics

including the venous system.

Changing the angled position to the right can result in changes in the shape of the chest, abdomen and decreased intrathoracic pressure which can reduce venous return, cardiac output, and MAP. In this study there was a decrease in CVP value when the HoB elevation 30o position was tilted right. In the study of Lan et al. (2010) and Thomas et al. (2007), the hemodynamic effect is more common in the lateral position than the supine position as a result of decreased venous return because the inferior vena cava is bent. The position of the inferior vena cava adjacent to the right side facilitates suppression by the kidneys. Decreasing almost 10% of the volume at the end of the right ventricular diastolic at right lateral position, the condition is associated with a decrease in the amount of blood volume leading to the atrium even though the cardiac index tends not to change.

According to Lorenzo et al. (2012), the size of the inferior vena cava (IVC) is closely related to the results of the CVP assessment. The study states that measuring IVC diameter through ultrasonography can be used as determination of CVP values in indicating fluid volume status (Citilcioglu, 2014; Wiwatworapan, Ratanajaratroj & Sookananchai, 2012). In the right side HoB 30o position, IVC has kinking because the close IVC to the right facilitates suppression by the kidneys, and anatomically the location of the heart in the left hemithorax, when tilted to the right, the left side of the heart pushes to the right which causes the diameter of the right atrial space decreased, so that the volume of blood / venous return has decreased so that the impact on the decrease in blood pressure is greater when compared with the left lateral position (Hazebroek & Bonjer, 2011). The results of a study conducted by Yoon et al (2006) that the CVP value at right-angled position shows a lower result than the head up or supine position and it is recommended that the level of the transducer should be placed higher. According to Daihua et al., (2012) there is significant influence between changes in position on stroke volume in septic patients with mechanical ventilation. Furthermore, it was stated that head up 30o increases stroke volume and MAP, at right side HoB 30o position, MAP results are 81 ± 12.3 while HoB 30o is left side 83.8 ± 11.6. Stroke volume is often used to predict fluid responsiveness based on the results of CVP assessment, so that in this case stroke volume is indirectly the result of a CVP value (Marik & Cavallazzi, 2013).

Based on this explanation, the results of this study corroborate the statement of research that has been carried out by Daihua et al., (2012) and Marik & Cavallazzi, (2013). right side due to an increase in the diastolic end diameter of the right ventricle and the right atrium in the left position, allowing the high return to the right atrium (Sen, Aydin & Discigil, 2007; Aries et al., 2011). Evaluation of inferior vena cava from echocardiography in subcostal display showed that the IVC diameter decreased which was observed at the end of inspiration when intrathoracic pressure was negative and caused an increase in the ventricular right (RV) in filling from systemic veins. IVC size was significantly affected by the position of the patient, the smallest in the right lateral position, the middle in the supine position, and the largest in the left lateral position which correlated with the right atrial pressure (Ginghina et al. 2009).

Referring to a study conducted by Maas, Grerts & Jansen (2011), this study found the same finding trend. Gravitational changes due to changes in position affect numerous cardiovascular (CV) and neurohumoral adjustments of gradient friction calculations on MAP and CVP values, where changes in position towards the left lateral increase in the diameter of the inferior vena cava which results in increased right atrial pressure of 1 mmHg and finally increase CVP. Changes in the left side position have an impact on increasing preload as a result of accumulated blood volume (300-800 ml) in the upper arm and backflow from the lower vein which is then detected by atrial baroreceptors activity and stimulates the sympathetic system and heart rate and contractility which can increase preload and cardiac output which correlates with right atrial pressure. This mechanism ends with an increase in CVP. However, this does not benefit patients with heart failure or after infarction without bradycardia because the heart has decreased function (Maas, Grerts & Jansen, 2011).

Based on statistical value using anova test and the post-hoc paired wise comparations test, there were significant differences in CVP values in patients with mechanical ventilation between the position of HoB elevation 30o in a neutral position, right side and left side. The average CVP difference is 0.69 and 0.85 cmH2O (less than 1 cmH2O). In clinical judgment, these differences do not show significant differences, because it will not lead to differences in clinical interpretations and therefore these differences will not affect the determination of diagnosis and selection of therapy, noting that the respondents in this study were 25% in normal CVP values, but if the patient is at a low or high CVP value, it could be a clinical consideration in determining the intervention (Mulyati, Fatimah & Susilaningsih, 2012). Another implication of the results of this study, CVP can be measured in the position of the right side or left side HoB elevation 30o without having to change the position of the HoB elevation 30o to a neutral position.

Conclusion

Based on the results of the study it can be concluded that there was a significant difference in CVP values of patients with mechanical ventilation among HoB elevation 30o neutral, right side, and left side positions. Mean score of HoB elevation 30o left side position was the highest. The mean difference between HoB elevation 30o neutral and left side position was higher than neutral and right side position. There was significant difference between mean score difference of HoB elevation 30o neutral-left side and neutral-right side postions. Although it was statistically difference, in fact, the values less than 1 CmH2O which perhaps clinically did not have significant meaning.

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Mucositis Effect on Quality of Life of Hospitalized Children with Cancer Who Received Chemotherapy

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Abstract

Mucositis is very common in children with cancer who received chemotherapy. Mucositis in children renders other health problems such as pain, eating problems, insomnia, and emotional problems that directly determine children's quality of life. The purpose of this research was to identify how the effects of mucositis on quality of life in children with cancer who received chemotherapy. The method used in this research is correlative descriptive analytic with cross-sectional design. Samples taken in this research utilized consecutive sampling technique. The children with cancer who met the inclusion criteria were approached to participate in this research. Sixty children with cancer hospitalized in Dr. Hasan Sadikin Hospital Bandung recruited in this research. Mucositis identification utilized Oral Assessment Guide (OAG). Data quality of life (QoL) would be assessed with PedsQoL Cancer Module 3.0. Data were analyzed by Chi-square correlation test. There are 53 children (88.3%) who experienced mucositis. In contrast, there are only 7 children who didn't experience mucositis (11.7%). Based on this survey, there are 37 children (61.7%) have bad quality of life. Otherwise, 23 children (38.3%) have good quality of life. This research found that there is a significant relationship between mucositis and QoL of children with cancer. Accordingly, the relationship between mucositis cases and QoL of children with cancer valued at 0.006 ($p<0.05$). Mucositis cause low QoL in children with cancer compared to them without mucositis. Nurse should increase nursing care for children with mucositis as the side effect of chemotherapy. Suggested efforts are to prevent mucositis complication that will impact QoL, such as giving oral care with honey, keeping humid oral mucosa, and preventing infection.

Keywords: Chemotherapy; Children with cancer; Mucositis; Quality of life.

Introduction

Cancer is a group of abnormal cells formed by growing, unlimited and uncoordinated cells unrelated to surrounding cells and physiologically malfunctioned (Price & Wilson, 2013). This abnormal group of cells is produced by factors; genetic and surroundings (Baggot et al., 2002). It changes cell metabolism and destructs body's physiological functions (Price & Wilson, 2013).

Nowadays, cancer is a serious and threatening disease for children around the world. The threat is immense according to recent numbers of new cancer sufferers. National Cancer Institute or NCI (2009) stated that there are more than six millions new cancer sufferers every year. Additionally, NCI (2009) assumed four percent cancer were in children.

Children with cancer is a growing problem in Indonesia (Sujudi, 2002). According to Gatot (2008), the prevalence of cancer in children in Indonesia hits four percent and it means four percents of birth rate in Indonesia will suffer cancer. Nowadays, cancer is included into the top ten of lethal cause of children mortality in Indonesia (Kemenkes RI, 2017). This fact is supported by the data from National Hospital (RSUPN) Dr. Cipto Mangunkusumo Jakarta which also showed that cancer is included into the top ten of lethal cause of children mortality in Indonesia. The data from Dr. Hasan Sadikin Bandung Hospital in 2010 showed similar fact; that cancer is the first cause for children mortality in this hospital and chemotherapy in children with cancer is the most common case (Departemen Ilmu Kesehatan Anak RSUP Dr. Hasan Sadikin Bandung, 2016).

Cancer in children should be treated adequately. NCI (2009) stated that cancer treatment in children includes chemotherapy, bio-therapy, radiological therapy, cyrotherapy and spinal cord transplant peripheral blood stem cell. The most applied therapy in cancer for children is chemotherapy. Chemotherapy does not only provides a good impact, but also provides adverse side effects for children, both physically and psychologically. Side effects that occur depend on the type and dose of chemotherapy drugs used. Chemotherapy causes children to be susceptible to mucositis, infections, bleeding, fatigue, lethargy, hair loss, nausea, vomiting, diarrhea, constipation, decreased appetite, neuropathy, haemorrhagic cystitis, urinary retention, moonface, sleep disorders, and an effect on fertility adult (National Cancer Institute, 2010; Hockenberry et al., 2010). The most common side effect experienced by children is mucositis. This often interferes with the daily activities of the child, including school (van Vliet, Harmsen, de Bont, & Tissing, 2010). Mucositis is an oral mucosa membrane inflammatory and ulceration. Oral Mucosa consists of mucosa cells that incessantly and promptly divided. Chemotherapy disturbs mucosa cell division and it leads to mucositis. Mucositis has negative effects for children (Cancer Care Nova Stovia (CCNS), 2008).

According to a study by United Kingdom Children's Cancer Study Group and Pediatric Oncology Nurses Forum or UKCCSG-PONF in 2006, the mucositis prevalence among children is around 30−40%. Another study by Cancer Care Nova Stovia (CCNS) in 2008, stated that mucositis prevalence was even bigger, it was 45−80%. In Indonesia, studies on mucositis prevalence are yet unpopular. Despite, Nurhidayah, Sholehati, and Nuraeni (2013) from Dr. Hasan Sadikin Hospital Bandung, revealed that most respondents suffered from mucositis (67.9%).

Mucositis in children renders other health problems; pain, insomnia, eating problems and emotional problems that directly determine children's quality of life. A study by Cheng et al. (2012) on mucositis effects to children's quality of life comprised 140 children of 6−18 years old in China disclosed decrease of quality of life based on problems of eating, gulping, drinking, sleeping and talking. In Indonesia, studies on quality of life of children with cancer are yet unpopular. Despite, Irmawati, Irwanto, and Cahyadi (2013) from hospital in Surabaya identified the quality of life in children with cancer using PedQoL 3.0, this studies revealed that the scores from children for treatment anxiety, cognitive problem and total scale was high. The subscale procedure anxiety, worry, and pain-hurt had low-scores for both children, and the overall scores was

61–81. Another study by Cheng (2008) in Hong Kong, revealed 80% oral mucositis by cancer therapy in adults resulted disturbance to patients' daily activities and psycho-social functions. The study utilized Chinese Version Functional Assessment of Cancer Therapy General Questionares (Ch-FACT-G). The result illustrated correlation between mucositis effects to children's quality of life; social, emotional, and physical life. Quality of life should be considered as a significant consideration for cancer treatment in children. Dr. Hasan Sadikin Hospital Bandung is the reference hospital for children cancer case in West Java. A study on children cancer case in this hospital disclosed that most children were suffering from pain caused by mucositis. This pain leads children to experience gulping, drinking, sleeping and speaking problems. Pre-study showed similar result, most parents claimed their children suffered from emotional (easily disturbed) and physical problems as well as eating and speaking problems (articulation).

It's very important for nurse to understand effects of mucositis to the quality of life of children with cancer. This understanding helps nurses to decide properly nursing interventions for children regarding their condition. Consequently, mucositis effects on quality of life of children with cancer is essential to be studied. The objective of this study is to identify mucositis effect on quality of life of children with cancer.

Method

This study design used correlative descriptive analytic with cross sectional design (Polit & Beck, 2008). This method aimed to recognize how mucositis determines the quality of life of children with cancer. Hypotheses formulated in this research are mucositis effect to quality of life of children with cancer is exist. The object of this research is children with cancer in children care centre in Dr. Hasan Sadikin Hospital Bandung which has average attendance of 30 children each month. Samples were obtained in this research using a consecutive sampling method. The inclusive criteria were: 1) the object of this research is children with cancer aged 2-18 years, 2) children were in ongoing treatment in Dr. Hasan Sadikin Hospital Bandung, and 3) children were in stable hemodynamic conditions. While the exclusive criteria is children with nasofaring cancer stage 3-4; the children in this stage are obstructed to open their mouth, therefore it's almost impossible to assess their mucositis. The time range of this research is 3 months from July 2015 to September 2015 with 60 samples of children with cancer hospitalized in Kenanga I and II Children Care Center in Dr. Hasan Sadikin Hospital Bandung.

Mucositis identification in children utilized Oral Assessment Guide (OAG). This instrument was designed by Eilers, Berger, and Petersen (1988); Dodd (2004); and Eilers (2004). This assessment is considered as affable for nurses to assess mucositis in children. OAG consists of eight assessment parameters, namely objective assessment to see the status of mucous membranes, lip, tongue, gingival, and tooth conditions; as well as functional and subjective studies to assess sound; salivary gland function, and swallowing ability. The assessment is described in score 1 to 3 for each parameter. Score one (1) if normal, score two (2) if there is a moderate change, and score three (3) if there are severe changes. The method of OAG assessment is done by observation, visual examination, palpation, and auditory. The lowest mucositis score is 8 and the highest score is 24.

Data of children quality of life would be assessed with PedsQoL (Pediatric's Quality of Life) Cancer Module 3.0 designed by Varni, Burwinkle, dan Seid (2005). This instrument is proven for its reliability and validity and had been translated into 69 languages. The PedQoL Cancer Module 3.0 instrument is specifically used to assess the quality of life of children with cancer. The PedQoL Cancer Module 3.0 includes eight domains, namely pain and hurt, nausea, procedural anxiety, treatment anxiety, worry, cognitive problems, perceived physical appearance, and communication. Assessment is given with a score of 0 to 4 on each item in question. Each answer to the question is converted to a scale of 0 to 100 for standard interpretation, namely the score 0 = 100, score 1 = 75, score 2 = 50, score 3 = 25, and score 4 = 0. The total

score is calculated by adding the score of the question answers divided by the number of questions answered on all domains.

Research of nursing must be tied to these codes of conduct; self determination, anonymity and confidentiality, protection from discomfort, beneficence and justice (Polit & Beck, 2008). This study has received ethical approval from the Health Research Ethics Committee Dr. Hasan Sadikin Hospital Bandung with a number of ethical clearance LB.04.01/A05/EC/154/V/2015. The researcher would take sample of data in accordance with procedures for administrative and research permission.

Samples of data would be processed with statistical analysis on result of study. Data analysis will use univariat dan bivariat analysis. Univariat analysis aimed to analyze research variables descriptively. Descriptive analysis describes mucositis cases and quality of life of children with cancer using mean value, standard deviation, and frequency distribution. Univariat result data showed here as frequency and percentage. Bivariat analysis was completed to examine hypothesis with proportion differentiation test using correlative statistical test (Chi-square correlation test). Moreover, the latter employed to determine relation between independent and dependent variables. This analysis employs meaning degree α 5% ($p<0.05$). If only $p<\alpha$, therefore hypothesis is rejected.

Result

This research was completed in Kenanga Room I and II Children Care Center in Dr. Hasan Sadikin Hospital Bandung in 3 months since July to September 2015. There were 60 hospitalized children with cancer and earned chemotherapy in both rooms.

Mucositis case of hospitalized children with cancer in Children Care Center Kenanga Room I and II Dr. Hasan Sadikin Hospital Bandung is drawn in table below.

Table 1 Mucositis Case of Hospitalized Children with Cancer in Children Care Center (n = 60)

Mucositis Case	Frequency (n)	Percentage (%)
Non-Mucositis	7	11.7
Mucositis	53	88.3

Table 2 Quality of Life of Hospitalized Children with Cancer in Children Care Center (n = 60) according to PedQoL Cancer Module 3.0

Quality of Life	Value Mean	Deviation Standard	Minimum Score – Maximum Score
Total Score	49.23	21.73	11.54 – 94,44
Pain and Hurt	48.75	35.26	0.00 – 100.00
Nausea	39.50	33.59	0.00 – 100.00
Procedural Anxiety	48.61	39.78	0.00 – 100.00
Treatment Anxiety	71.39	33.63	0.00 – 100.00
Worry	33.75	38.92	0.00 – 100.00
Cognitive Function	50.23	25.49	0.00 – 100.00
Physical Function	58.33	36.47	0.00 – 100.00
Communication Function	54.44	33.52	0.00 – 100.00

Table 3 Quality of Life of Hospitalized Children with Cancer in Children Care Center (n = 60) according to PedQoL Cancer Module 3.0

Quality of Life	Frequency (n)	Percentage (%)
Good Quality of Life	23	38.3
Bad Quality of Life	37	61.7

Tabel 4 Mucositis Correlation with Quality of Life of Hospitalized Children with Cancer in Children Care Center (n = 60)

Variables	Quality of Life PedQoL Cancer Module 3.0
Mucositis Case	p = 0.006

Table 1 showed that most children with cancer who received chemotherapy experience mucositis as many as 53 people (88.3%). As a fraction as many as 7 people (11.7%) had no mucositis.

Quality of life (QoL) of hospitalized children with cancer in Children Care Center Kenanga Room I and II Dr. Hasan Sadikin Hospital Bandung is drawn in table below.

Based on table 2, questionnaire PedQoL Cancer Module 3.0 expose quality of life based on treatment anxiety experienced by children with cancer attain highest value mean (71.39). Quality of life with high mean value in addition to aspects of treatment anxiety also followed by aspects of perceived physical appearance (58.33), communication (54.44), and cognitive problems (50.23). Otherwise, quality of life based on children's worry to face their illness and their medication has lowest value mean of 33.75, followed by aspects of nausea (39.50), procedural anxiety (48.61), and pain and hurt (48.75).

Based on table 3, there are 37 children (61.7%) have bad quality of life. Otherwise, 23 children (38.3%) have good quality of life. Mucositis correlation with quality of life of hospitalized children with cancer in Children Care Center Kenanga Room I and II Dr. Hasan Sadikin Hospital Bandung drawn in table below.

Based on table 4, there's such a significant relationship between mucositis and quality of life of children with cancer. Accordingly, the relationship between mucositis cases and quality of life of children with value p of 0.006 ($p<0.05$) based on quality of life PedQoL Cancer Module 3.0.

Discussion

Mucositis Cases in Children with Cancer

Patients who earned chemotherapy were risked 20%-40% to experience of mucositis. Oral mucositis symptoms consist of objective symptom (erythema, lesions, and edema), subjective changes (pain, sensitivity and dry feeling) and functional adjustment (changes of voice, gnawing and swallowing) (Potting et al., 2005). Mucositis caused by injured cells. Injured cells ensued by drugs; chemotherapy side effects, chemicals, infections, traumas or irritated lattice caused by mechanic stuffs (for example, contact between mucosa and stuffs as tooth brush).

This result shows that almost all children with cancer who earned chemotherapy experienced mucositis. There are 53 children out of 60 (88.3%) who experienced mucositis. In contrast, there are only 7 children who didn't experience mucositis (11.7%). This research synchronizes former research by Nurhidayah, Sholehati, and Nuraeni (2013) who showed that most children with cancer (67.9%) who earned chemotherapy experienced mucositis. According to a study by United Kingdom Children's Cancer Study Group and Pediatric Oncology Nurses Forum or UKCCSG-PONF in 2006, mucositis prevalence in children with cancer reach 30−40%. Another study by Cancer Care Nova Stovia (CCNS) in 2008, revealed bigger probability of mucositis prevalence (45−80%).

Mucositis in children with cancer could be categorized as severe. According to Eilers (2004), mucositis renders various disorders; physiologically and functionally. Physiological disorders caused by mucositis are lesions, ulceration, extra inflammation, pain and infection. Lesions and ulceration caused by mucositis predispose bacterial infection, fungi and virus. This will threat children for its systemic infection risk. In addition, functional disorder caused by mucositis are gnawing, swallowing and speaking obstruction.

This research reveals 88.3% of children with cancer who earned chemotherapy experienced mucositis. Based on claims by children with cancer who experienced mucositis, there are several disorders entailing. They are soreness, insomnia, eating and emotional problem and activity obstruction. These disorders disturb directly the quality of life of children with cancer.

Quality of Life of Children with Cancer

Severe illnesses emerged in childhood; cancer is one of them, could bring down children's growth and future prospects. Cancer is a severe disease with double effects; the troubling illness itself and side effects of its treatments. Cancers need continuing medication and treatment, one of them is chemotherapy. Severe condition experienced by children costs their physical, psychological and social condition (Bulan, 2009). This cost due to children's maturation process and children growth in each level. Disturbed growth relates children's quality of life.

Continuing chemotherapy for children with cancer will cost physically (easily infected, bleeding, fatigue, lackluster, falling hair, mucositis, sick, constipation, low appetite, neuropathy, hemorrhagic cystitis, urinate retention, moonface, insomnia and fertility for adults). Psychosocial effect is another side effect of continuing chemotherapy. Among them are mood disorder, anxiety, lost confidence, low self esteem, depression and behavioral changes lead to school refusal (Hockenberry et al., 2010). All these are immense for children with cancer. Moreover, their quality of life will decrease to the lowest level.

Based on questionnaire PedQoL Cancer Module 3.0 children with cancer who hospitalized and experienced treatment have low quality of life. Based on this survey, there are 37 children (61.7%) have bad quality of life. Otherwise, 23 children (38.3%) have good quality of life. This number reveals most children with cancer are in no good quality of life.

Questionnaire PedQoL Cancer Module 3.0 expose quality of life based on treatment anxiety experienced by children with cancer attain highest value mean (71.39). Result of this questionnaire displays anxiety treatment for children with cancer resulted better quality of life compared to other aspects. This aspect comprises treatment for children's anxiety emerged throughout their medication at hospital. Regularity of medication leads to low anxiety throughout their medication at hospital. A similar study conducted by Bariah et al. (2011) in Malaysia also shows that the quality of life aspect in terms of treatment of anxiety has the highest mean value of 81.94. The research of Ji et al. (2011) also shows that quality of life viewed from procedural anxiety has a mean value of 68.02. This indicates that children are experiencing fears about the procedural treatment that undergoes, resulting in decreased quality of life. Quality of life with high mean value in addition to aspects of treatment anxiety also followed by aspects of perceived physical appearance (58.33), communication (54.44), and cognitive problems (50.23).

Otherwise, quality of life based on children's worry to face their illness and their medication has lowest value mean of 33.75. The latter contradicts the previous; in case of facing illness and medication, the children attained lowest score. The children are vulnerable to anxiety of side effects, or their probability of thriving medication. Moreover, the anxiety of recurrence of cancer is also excess their feeling. These factors contribute to lower children's quality of life. In this study, the quality of life with the lowest mean value in addition to the aspects of worry or fear, followed by aspects of nausea (39.50), procedural anxiety (48.61), and pain and hurt (48.75) that show has a worse quality of life when compared with other aspects.

This study is in line with the results of research Fawzy et al. (2013) that conducted in Egypt using the PedQoL Cancer Module 3.0 questionnaire. Research of Fawzy et al. (2013) showed that children with cancer had a poor quality of life with a mean value of 62.29. When viewed from various aspects that shape the quality of life, the research of Fawzy et al. (2013) have similar results with the results of this study where the lowest mean value of quality of life score is in the aspects of worry (44.11), perceived physical appearance (50.6), and procedural anxiety (55.34). While the highest mean value on quality of life score is in communication (75.98) and cognitive problems (72.63).

The similar studies in Brazil also used the PedQoL Cancer Module 3.0 questionnaire (Scarpelli et al., 2008). This study shows that children with cancer have poor quality of life with a mean of 76.41. But in a study in Brazil it shows that the aspect of pain and hurt has a higher value than other aspects with a mean value of 86.47. This shows that

the children are able to adapt to the pain and hurt that felt. The study was supported by research conducted by Tsuji et al. (2011) in Tokyo, Japan, which also showed poor quality of life in children with cancer with a mean of 77.89. In the study of Tsuji et al. (2011), communication aspect has the lowest value when compared with other aspect with mean value equal to 67.03. Based on this it can be concluded that children with cancer may have obstacles in communication, for example because it is difficult to tell doctors and nurses what is felt, answer questions from doctors and nurses, and difficult to explain the disease to others.

If the value of quality of life in these countries is compared between the mean values of this study conducted in Indonesia, especially in Dr. Hasan Sadikin Hospital Bandung with some studies conducted abroad, including in Thailand, China, Brazil, Japan, Malaysia, and Egypt, the value of total quality of life of children with cancer in Indonesia is much lower when compared with the score of quality of life values in the countries outside. This shows that the quality of life of cancer children in Indonesia is worse when compared with other countries. Thus it is necessary efforts of health workers, especially nurses to be able to improve the quality of life of cancer children in Indonesia in particular. Nurses should be able to provide support to children and families in identifying effective coping strategies so that children and families feel comfortable in chronic conditions experienced by children and can adapt positively to have a better quality of life.

Mucositis Relationship with Children with Cancer Quality of Life

This study found that there's such a significant relationship between mucositis and quality of life of children with cancer. Accordingly, the relationship between mucositis cases and quality of life of children with value p of 0.006 ($p<0.05$) based on quality of life PedQoL Cancer Module 3.0. Mucositis is able to worsen quality of life of children with cancer in comparison with non mucositis case in children with cancer.

This study confirms previous study by Cheng et al. (2012) on mucositis effects on quality of life of children and teenager as it taken from 140 samples with age range of 6−18 in China. Cheng's study found that there's generic decrease of quality of life among children and teenagers with cancer. Common symptoms emerged as eating, swallowing, drinking, sleeping, oral problem. Another study by Cheng (2008) in Hong Kong revealed oral mucositis, caused by cancer therapy, among 80 adult patients had disturbed their daily activities and social life. The result confirmed positive line of mucositis effects on social life, emotional life and physical fitness among children. The conclusion is, the children who experience mucositis were disturbed physically, emotionally and socially. The disturbs lead to a worsened quality of life.

In this matter, nurses should actively foster children with cancer to minimize the occurrence possibility of mucositis caused by chemotherapy. Possible treatments are oral cares; oral cleanliness to protect oral cavity, to prevent plaque emergence on teeth, to keep mucosa humid, to keep mucosa integrated, to keep away infection, to prevent oral ulceration and to maintain other oral functions. Oral mucosa damage is unavoidable, but it could be minimized by preventing infection.

Moreover, the children with heavy side effects should experience good quality of life. They should be physically, emotionally good and excel their social and academic life. One of prime efforts, to boost their quality of life, is children ought to learn their course at the hospital as well as to interact and earn their emotional therapy to help them to cope with the side effects.

Conclusion

This research found that there is a significant relationship between mucositis case in children with cancer with their quality of life explained by p value = 0.006 ($p<0.05$) based on quality of life PedQoL Cancer Module 3.0. Therefore, significant relationship between mucositis with quality of life in children with cancer is confirmed. Mucositis cause low quality of life in children with cancer compared to them without mucositis.

Nurse, in this matter, should increase

cares for children with cancer to minimize mucositis probability as side effect of chemotherapy. Suggested efforts are cares for oral cleanliness to maintain healthiness of oral cavity, preventing surface plaques on children teeth to ward off dental caries, keeping humid oral mucosa, maintaining mucosa integrity, preventing infection, preventing oral ulceration and maintaining oral function. Oral mucosa damage is unavoidable. However, prevention steps to ward off infection could minimize damage to oral functions. Additionally, profound side effect of medication shouldn't prevent children to gain good life; physical, emotional, social and academic. To provide them opportunities to learn and to interact while they are hospitalized and to give them extra sessions of psycho-therapy would help them to cope with medication's side effects.

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Nursing Students' Roles and Experiences of Disasters in A Nursing School

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Abstract

Due to its location in the 'Pacific Ring of Fire", Indonesia is frequently prone to natural disasters. Therefore, Indonesian nurses need to have the ability to assist in disaster situations as they are considered an important element of the workforce in disaster preparedness and response. However, the current nursing curricula in Indonesia does not adequately prepare nurses to respond in these situations. The primary aim of this study is to understand the experiences of Master of Nursing students' roles and experiences in disaster settings in a nursing school in East Java, Indonesia. A single-case study design has been used. Data colection occurred via semi-structured interviews. The participants were enrolled in the Master of Nursing in a School of Nursing at a University in East Java. The data for the study were thematically analysed. Four main themes were identified: 'personal feelings', 'working outside their scope of practice', 'lack of disaster preparedness', and 'a lack of mental health knowledge and care'. This study found that the Master of Nursing students in a nursing school in East Java, Indonesia were not adequately prepared for responding to disaster situations. This study found that a lack of disaster preparedness, working outside scope of practice, and a lack of mental health knowledge were the prominent issues for these Master of Nursing students. As well as commencing disaster training earlier in their education, providing training in the psychological context of disaster preparedness is recommended.

Keywords: Disaster, Indonesia, nursing, nursing students, nursing roles.

Introduction

The United Nations International Strategy for Disaster Reduction (UNISDR) defined a disaster as:

"A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts. (UNISDR, 2017, terminology on disaster risk reduction section)."

In 2015, 998 million people were affected by disasters, with 22,773 losing their lives. In total, 345 disasters were recorded with the majority of these happening in the Asia-Pacific region, and a total of 11 occurring in Indonesia (UNISDR, 2014). Disasters in Indonesia are predominantly geophysical or hydrological in nature. The Indonesian National Disaster Management Authority (2015) reported that, in 2014, 425 disasters struck Indonesia causing 206 deaths and 1,505 injuries, with 41 people missing. In 2015, there were 1,116 disasters with 186 deaths, and affecting a further 636,205 people, with 9,557 survivors being evacuated (The Indonesian National Disaster Management Authority, 2015).

These ongoing situations have heightened recognition of the role of nurses in disaster management and response (Veenema, 2018). As an important part of the health disciplines, nurses are on the frontline of responding to disasters (Cusack, Arbon & Ranse, 2010). However, Chapman and Arbon (2008) have asserted that it is not only nurses who need to respond to disasters, but also nursing students. In western countries, nursing students have been involved in responding to emergency situations, including disasters such as that which occurred in Haiti, and the cases of Tropical Cyclones Debbie and Irene (American Red Cross, 2012). Therefore, providing nursing students with disaster preparedness training is crucial to ensuring that they are well-prepared for disaster situations (Chapman & Arbon, 2008).

Disaster preparation education has been established in several schools of nursing in the United States of America (USA) by developing a variety of programs ranging from certificates to master's degrees (Veenema, 2018) (see Table 1). These schools include, but are not limited to, Adelphi University (a Graduate Certificate in Emergency Management), Johns Hopkins University (Master of Science in Nursing Health Systems Management: Emergency Preparedness/Disaster Response), St. Louis University (online certificate program of Disaster Preparedness for Nurses), Grand Valley State University (a series of lectures for senior nursing students on the threats of bioterrorism agents and re-emerging infections), and University of Texas at Austin (Initiatives for Mass Casualty Education course) (Veenema, 2018).

These programs provide opportunities for practicing nurses to prepare appropriate responses to catastrophic, mass casualty events and public health emergencies (Veenema, 2018). Moreover, these educational programs support a wider strategy of preparing nursing students for disaster events (Hutchinson, et al., 2011). Moreover,

Table 1 Universities Providing Disaster Nursing Courses in United States (Veenema 2018)

Universities	Course
Adelphi University	Graduate certificate of Emergency Management),
Hopkins University	Master of Science in Nursing Health Systems Management: Emergency Preparedness/ Disaster Response
St. Louis University	Online certificate program of Disaster Preparedness for Nurses),
Grand Valley State University	A series of lectures for senior nursing students on the threats of bio-terroristic agents and remerging infections),
University of Texas at Austin	Initiatives for Mass Casualty Education course)

Olivia, Claudia and Yuen (2009) argued that disaster preparedness content delivered within a school of nursing will develop and enhance nurses' preparedness for emergency cases in the future.

International Council of Nurses (ICN) has established the minimum standard of nursing disaster curricula to be applied in nursing schools. This curricula covers the basic standard of nursing competencies in order to be ready to participate in disaster situations, including mitigation, preparedness, response, and recovery programs (World Health Organisation 2009).

In 2015 the The Association of Indonesian Nurse Education Center (AINEC) established a curriculum for Bachelor of nursing program. This curriculum contained a disaster nursing subject (AINEC 2015; Hermawati, Hatthakit, & Chaowalit 2010). Indonesian nursing students in East Java receive two units of disaster nursing content in their seventh semester of undergraduate nursing program. This module covers the International Council of Nursing (ICN) disaster nursing competencies (AINEC 2015). This unit, however, is not enough to adequately prepare nursing students to be fully ready to assist in a disaster area (Hermawati, Hatthakit, & Chaowalit 2010). Generally, disaster nursing content is not available in Master's curriculum in Indonesia. However, Master's of Nursing in limited universities provide elective program such as seminars, training and disaster drills. One of these universties is a university in East Java. Therefore, the Kelud Eruption occurred in East Java in 2014, many Master students from the school were involved in assisting during this situation. However, even with the current training, the experience of these students providing care in disasters is unknown. In addition, the experience of nursing students in lower middle income countries, such as Indonesia are under represented in the disaster literature Therefore, this study will focus on exploring the experience of Master's of nursing students in responding to a disaster in East Java, Indonesia.

Method

While the focus of this study lends itself to the potential use of one of several qualitative traditions or methodologies, the case study method was chosen. Case study is an approach summarised in-depth investigation of experience in the diversity of the social environment under study (Hentz, 2007). It was envisaged that the complexity of the student experience of working in a disaster would be described holistically through the case study method. Purposive sampling was employed in this study. It was possible that some of the participants might experience anxiety or have an emotional reaction when discussing their experiences in disaster setting. Therefore, enabling participants to come forward and identify themselves voluntarily was important.

Data collection was conducted through semi-structured interviews. The researcher interviewed seven participants until data saturation had been reached. Data saturation is the point in the research process when no new information is discovered in data analysis, this point was reached after seven interviews (Fusch and Lawrence, 2015).

All participants provided care after the Kelud volcanic eruption, while one participant also experienced providing care during a flood. Of the seven participants, five had responded to a disaster once, one had responded twice, and another four times. These students were enrolled in a general Master of Nursing course concerned with specialty areas of practice, including critical care nursing, and mental and community health.

The setting for the study is a university in East Java, Indonesia. The location was chosen specifically because there was a disaster (Kelud Eruption) in February 2014. This research was conducted a year after the catastrophic event. Moreover, this nursing school provides disaster seminar and drills in the second semester of its Master's program. Further recruitment criteria included being over 18 years of age, and participating in disaster settings from 2012 to 2014.The data collection was conducted in 2015

through semi-structured interviews as the data collection method. As part of this, the researcher provided a set of questions as a guide for the interviews. All interviews were conducted in a private secure room at the university. Each interview took between 60 to 90 minutes for each participant, and all participants gave informed consent. The interviews were audio recorded. Ethics approval was sought and gained for this study at Flinders University (SBREC6336) as well as the Ethics Committee of the Cendekia Utama Kudus Health Collage in Indonesia (380/EC/KEPK-S2/06/2014).

A thematic analysis was used to generate the initial findings from the data resulting in four main themes being used to present the overall findings of the study. Thematic analysis was used to analyse the data. An inductive, semantic approach to thematic analysis was selected, as this method supported the exploratory nature of the study and ensured that the themes identified were strongly linked to the collected data (Braun & Clarke, 2013).

Following Braun and Clarke's (2013) process, the data was analysed using six steps. Firstly, the researcher familiarised herself with the data through the transcription process. In this step, the researcher transcribed the interview data into written form. Transcribing the data into text enables the researchers to deeply understand the data and check its rigour and accuracy. The second step is to generate initial codes, and then to collate data. This is followed by the third step, which involves the researcher looking for the broader meaning of the data through generating codes to develop main themes and sub-themes. Step four involves two phases consisting of reviewing the themes that have emerged during step three (reviewing the level of the coded data and refining the entire data set). Step five consists of defining and naming the themes, and identifying the essence of each theme. The final step consists of the researchers writing up a final report of the themes (Braun & Clarke, 2013).

To gain trustworthiness within a qualitative study the data must ensure faithful descriptions of the subjective interpretations of participants (Munhall, 2012). In this study each transcript was taken back to each participant for verification. In addition, through using the six steps of data analysis by Braun and Clarke (2013) a decision trail was created that can then be replicated by other researchers, thus enhancing trustworthiness of the data (Munhall, 2012).

How the researcher(s) maintain the Trustworthiness? Otherwise we cannot believe the results.

Result

This study found that the majority of Master of Nursing students believed that participating in disaster settings created a challenging work environment for them, due to their limited ability to cope with personal feelings, working outside their scope of practice, lack of disaster preparedness, and a lack of mental health knowledge and care.

Personal feelings

In this study, common feelings experienced by the participants were identified as worry, anxiety, and confusion in the pre-disaster response.

I felt anxious, yes ... I was also anxious when I was going to the disaster area ... Was it going to be okay or worse? You know, it (the volcano) was erupting. Eruption of Kelud was not only once. There were sudden tremors and smoke (Participant 1).

Anxiety was experienced when the participants thought about the potential chaotic situation of the disaster setting. Additionally, six of the seven participants felt worried and anxious about whether or not they could be of any help during the disaster.

I was afraid, worried, and confused before going there [to the disaster setting]. "Can I help them? [the disaster survivors]" (Participant 2).

… before knowing the situation in the disaster setting … there were two possibilities ... "Is it okay to be there? … am I safe there? Or maybe will be like a victim as well?" … I felt anxious (Participant 4).

Before going there ... I was so worried …

I was worried if I could not do anything there (Participant 5).

However, once they were in the disaster area, they felt relieved and eager to be participating. Yes... and after I arrived there [in the disaster area], I enjoyed it... not worried anymore... we worked in a team.. so ..it was memorable time, we can help others (the victims) (Participant 1).

I was worried at first .. again. However, when we arrived there.. I was so relieved... it was different from what I thought beforehand. (Participant 5).

All the participants stated that they were able to manage their personal feelings during disaster response. In the post-disaster phase, most participants also experienced positive personal feelings. Participants felt relieved and happy as they had gained more experience compare to their friends who had not volunteered. They thought that they not only attained disaster concept through their education, but were also able to practice it in a real situation. This was a positive overall aspect for them.

...yes... hmmm... ah, after volunteering and we were home, for sure we felt so relieved ... we had finished ..//.. finally, finished. By the way, I have an additional positive aspect. For most of my clasmates, participation in a disaster setting was only as concept in a class, but for us... for those who participated in the Kelud eruption, they experienced the real situation. Lucky me! I had been involved directly. It was a positive point for me. Well, it was my feeling when arrived home. (Participant 1)

…yes. In post-disaster … I think … there is such a personal satisfaction … so proud of myself … first, because we have the real experience, second because we helped to save the patients and their families. I think I did not have any traumatic feelings although it was my first time there … but, I was motivated enough … full of spirit. If there is another disaster, I will participate … if possible. We can save other people, can't we? (Participant 4).

Students were worried, anxious and confused before taking part in the disaster event. However, once they were at the affected area, they were able to participate and could manage their own feelings. During the post-disaster phase, all participants experienced positive feelings such as happiness, interest, and motivation. Consequently, with the positive outcomes of their experiences, they wanted to participate in disaster responses in the future.

Working outside the normal scope of practice

A major concern for the nursing students interviewed was the expectation that in disaster work, they were expected to work outside their scope of practice. Students mentioned that in the disaster situation, they needed to help other volunteer health professionals. For example, they were asked to stitch wounds and give prescriptions to patients, duties that are normally a medical officer's responsibility. This concern is illustrated by Participant 6,

The number of doctors was very limited … nurses were also taking part in some medical activities … although maybe it was not our responsibility. The situation required us to … when there were some patients with wounds … we did wound care … stitched the wound … and also giving prescriptions to the patients … So [whether] we wanted it or not, we had to do it. It was an unpredictable situation … an emergency situation (Participant 6).

As the disaster setting was an emergency situation, the participants felt that they should take action as soon as possible and fill in any gaps as needed. Five participants mentioned that in order to support each other in the disaster setting, doing the jobs of other professionals was a must. We helped doctors in giving medications and we infused patients as well … (Participant 5).

We collaborated with doctors in handling the patients and treating the wounds (Participant 2).

Due to the limited number of people volunteering, most of the participants mentioned that their jobs needed to be flexible while in the disaster area. Furthermore, unclear job descriptions and expectations within the disaster setting challenged them.

Yes, it was not clear ... our job description was not clear. For example, there was a case, when there was an emergency call, and we had no job description beforehand, we were

confused about it, who should be in triage, who should be here ... who should be there. So, everyone was asked to be there randomly to an emergency call. There was no clear job description (Participant 3).

Due to the limited numbers of people volunteering, most of the participants mentioned that their jobs needed to be flexible while in the disaster area. On occasions, other volunteers would ask them to take over their jobs; for example, nursing students were asked to handle and distribute the logistics of food delivery and distribution to the evacuation area. I was also asked to assist in handling many jobs..such as... helping army in providing food to the victims of disaster... (Participant 1)

At that time, food was abundant, but it was not distributed well ... only in one area.. So, we helped to bring the food to other evacuation area. (Participant 3)

In relation to providing appropriate services to the community during the disaster response, there were unclear job descriptions for the participants in this study. This was further exacerbated by a shortage of health professionals working in the affected area, meaning that nursing students were often left to do the tasks of other professions. To summarise this theme, nursing students experienced a challenging work situation due to often undertaking work which was outside of their normal scope of practice.

Lack of disaster preparedness.

The participants in this study talked about the lack of disaster preparedness. Due to the large number of disasters in Indonesia, all the participants thought that becoming competent in disaster nursing was crucial in order to support their disaster preparedness. The participants claimed that their knowledge of disasters was deficient in terms of disaster concepts, including simulations, and research about disasters.

In my undergraduate program, it [the curriculum] was so general... (Participant 4).

Five participants agreed that it would be beneficial if disaster content was taught earlier in their overall education.

Honestly, we needed to learn disaster theory in our bachelor's degree or the diploma. So far, in the master's program, the theory was very general. Not enough [about disasters] … it was limited … yes (Participant 7).

We did not need only theory, but also simulations and trainings as well ..., more practical skills are needed. Not only the theory … in both of them [undergraduate and postgraduate programs] (Participant 2).

The participants were interested in learning about disaster preparedness in the Master of Nursing program and how to respond to chaotic situations. Three of the participants stated that receiving disaster education from an early age was very important. Participants believed that children, for example, should receive a basic disaster education when they are in elementary school. Learning about disaster theory in their Master of Nursing program was beneficial, but the participants stated that they would have preferred to have learned this earlier in their academic career.

We have learned more in the master's program … I have learned more … the theory of the pre-and in-hospital program, how to evacuate patients as well. Therefore, when we were in the disaster program, we could help more. Maybe because we learn new competencies based on the American Nurses Association (Participant 6).

Overarching concepts of what happens in a disaster was described as being ineffective and needing improvement. Moreover, they also believed that both undergraduate and postgraduate nursing students needed more disaster training. The participants recommended that the availability of a disaster research laboratory on the university campus would enable students to conduct research on disasters. Furthermore, the participants mentioned that such research could provide recommendations in relation to what volunteers should do when taking part in a disaster situation.

Research can give a recommendation in specific disaster situations. I think there is still no research in disaster settings in Indonesia, especially in our campus (Participant 6).

Overall, the participants stated that disaster concepts, training, and research taught by Indonesian schools of nursing, as well as that learned outside of these schools, was insufficient. The participants identified this as the major factor that had an impact on their ability to participate successfully in

disaster responses.

Lack of mental health knowledge and care During the disaster response, students encountered patients with mental health-related issues. The participants stated that they tried to provide holistic care to the patients through therapeutic communication. However, they believed that they had little knowledge of how to care for these patients' mental healthcare needs. An example given by Participant 4 stated that, as part of their duties, they needed to persuade people to evacuate from their homes and leave their properties unoccupied. This process was not easy because most of the victims did not want to leave, as they wanted to keep their belongings safe. For some people, this was all they owned. Therefore, the participants believed that they needed to be taught how to care for distressed people during their nursing studies.

A sensitive approach was needed to persuade people to evacuate … because they thought that their property like house, land … or their pets were more important, so they tended to stay there than evacuate to the evacuation area. In this case, we had to persuade them to follow our instructions in the evacuation process (Participant 4).

… when we evacuated them … some of them did not want to be evacuated … so … yes, so we forced them, but not arrogantly, softly, this is what we call … caring … yes … caring … they did not want to leave their belongings … and we had to understand that (Participant 7).

Additionally, the participants stated that they needed to be silent and listen to the concerns of the people affected by the disaster. They also stated that it was primarily the female students who communicated with the affected people, as they were considered to be calmer, and could control their emotions. Thus, the participants in this study proposed that learning about theory and taking part in simulations focusing on the mental health aspects of patient care were needed. Participant 6 stated that there was a patient with a mental health problem and his team was not able to provide effective therapy or holistic care. As a result, his senior colleague, a nurse who worked in a psychiatric hospital, handled the case.

We could not do anything to the patient, it was done by Mr. A. He just finished his master's study in our nursing school. He did the therapy of the patient until her condition was getting better. So calm … not hysterical … no panic anymore. Yes, lucky us, there was Mr. A at that time. Finally, she was able to walk back home … we should not let patients like her feel so sad with her own feelings for such a long time. I highlighted that it was important to focus on mental problems as well. We have to learn holistic care … psychological, physical, social aspects as well. If we do not know all these aspects, we will have difficulties in the real situation, especially in disaster settings (Participant 6).

The importance of studying mental health was also mentioned by Participant 2 who stated that in the recovery phase, nurses should be able to assess patients' mental health.

It [the mental health program] was outside the subject, outside the curriculum. As we did not learn it at our campus, we did not practice it in the disaster situation. We did not explore the condition of those patients with non-physical trauma. Honestly, it was very much needed in the disaster … it was very important (Participant 2).

The small cohort in this study felt that specific education in mental health and mental illness would be beneficial for them when responding to disaster situations.

Discussion

The Master of Nursing students involved in this study were worried and anxious before taking part in the disaster event. However, once they were in the disaster area, they were able to participate and could manage their own feelings well and focus on the job at hand. Fothergill, Palumbo, Rambur, Reinier and McIntosh (2005) stated that personal feelings, worry, and anxiety prior to participation in a disaster setting is experienced by nurses before taking part in any disaster response. Hammad, Arbon, Gebbie and Hutton (2012) added that personal emotions such as fear and anxiety affected nurses prior to their participation in disaster response. Several authors have found that these feelings can

decrease the willingness to respond to disasters (Considine et al., 2011).

However, in the study reported here, these thoughts and emotions were managed by all the participants due to the willingness to help others. Once the Master of Nursing students were in the disaster location, their negative feelings turned to constructive thoughts and they became excited and interested in the job at hand. Fothergill et al. (2005) supported this finding and argued that a commitment to helping other people supports nurses' willingness to volunteer in disaster settings. In addition, responding to a disaster allows nurses to have positive personal feelings about being part of the disaster response which then supports their willingness to participate in future disaster responses (Fitzgerald et al., 2010; Hammad et al., 2012).

As part of their role in the disaster area, the students were asked to perform unfamiliar procedures that they did not do in their usual practice. They performed these tasks because of the emergency situation and the limited number of health workers in the field. Working outside the normal scope of practice is not new and is part of the work required in most disaster settings (Baack & Alfred 2013). Arbon et al. (2006) and Chapman and Arbon (2008) found that in these situations, nurses are frequently asked to do jobs outside their scope of practice, regardless of whether they are qualified or not. Gallardo et al. (2015) found that nursing students with more experience in disaster settings performed medical treatments outside of their scope of practice. It is not clear if the Master of Nursing students in this study were legally covered to work outside their scope of practice, or whether or not Indonesia has a modified practice authority for student nurses in disaster settings (Association of State and Territorial Health Officials 2012).

The students in this study not only worked outside of their scope of practice, they also performed other tasks unrelated to nursing such as handling the logistics of food. Gebbie and Qureshi (2002) found that this is another common occurrence with nurses often assisting operations officers in logistics, planning, finance, and administration. The participants believed that disaster content should be learned by nursing students as early as possible in undergraduate studies. They suggested that the undergraduate program of nursing would be the best educational level to introduce them to disaster content. This is not a new finding and many studies have argued for undergraduate programs to include disaster nursing (Usher & Mayner, 2011; Oztekin, Larson, Ugras & Yuksel, 2013; Peoples, Gebbie & Hutton, 2015). The participants in this study stated that they had received specific disaster content in their master's programs. However, they felt that this education did not meet all their needs in the disaster setting. They wanted to understand the role of government, undertake disaster training drills, and learn about disaster preparedness. Ireland, Emerson, Kontzamanis and Michel (2006) found that incorporating disaster training in the undergraduate program of nursing is helpful for enhancing nursing students' knowledge of disaster environments.

Disaster education and training are considered as effective ways to improve nursing students' knowledge of disasters (Kaplan, Connor, Ferranti, Holmes & Spencer, 2012). Disasters are chaotic situations which can contribute to the mental illness of survivors (Ranse, Hutton, Wilson & Usher, 2015), which is not uncommon in these circumstances. Warsini, West, Mills and Usher (2014) found that patients not only suffered from mental illness, but also identified as being anxious, depressed, having post-traumatic stress disorder, and having a heightened suicide risk (Warsini et al., 2014). Consequently, affected people need comprehensive psychiatric nursing care (Montazeri & Baradaran, 2005). However, all the participants lacked mental health knowledge and felt that they were unable to cope with this situation. Ranse, Hutton, Jeeawody and Wilson (2014) found that nurses identified the psychosocial aspects of disaster nursing as an important area for further research, as was improvement to clinical practice including training and curriculum development.

In order to be able to take care of patients with mental illness in the post-disaster phase, Nasrabadi, Naji, Mirzabeigi and Dadbakhs (2007) recommended that nurses be trained in mental health care prior to disaster response.

Although undergraduate and postgraduate nursing schools have established disaster curricula, mental health disaster content is still lacking (Ranse et al., 2015). Therefore, providing training in the psychological context of disaster preparedness in schools of nursing is a recommendation of the participants in this study in order to prepare them for dealing with the mental health problems that arise during disasters. Ranse et al. (2015) recommended that the availability of psychological disaster programs in nursing education is necessary to enhance nurses' and nursing students' preparedness to assist during disaster response.

Nursing students believed that disaster nursing preparedness would impact positively on their knowledge and roles in disaster responses. However, this is an area of research yet to be explored in this setting. In addition, exploring nurses' perspectives in providing mental health support to the patients in the disaster setting may uncover the need of specific psychological contents suitable to be established in nursing curricula of nursing schools in Indonesia. Further research is needed to understand more of these issues.

Qualitative studies elicit data from a small sample size; thus, the findings of this research may not be representative of the greater population of nursing students. Another limitation is that all the participants were Master of Nursing students. Despite these identified limitations, this research contributes to knowledge of nursing students' experiences in the disaster setting. As such, it provides an initial starting point for further research.

Conclusion

This research provides an insight into nursing students' experience of Master's of Nursing students in responding to a disaster settings in Indonesia. To capture the entire picture of Indonesian Master of Nursing students' participation in the disaster setting, and understand the perspective of nurses in lower middle income countries, further investigation should be undertaken. This study has found that student concerns, a challenging work environment, different roles, and the lack of disaster preparedness all contribute to the nursing students' experience of disaster response in Indonesia. This study has found that these factors need to be improved and has made recommendations to commence training earlier in nursing education and to include training in mental health nursing in Indonesia's nursing schools.

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The Effect of the E-Patuh Application on HIV/Aids Patients' Adherence in Consuming Antiretroviral

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Abstract

Medication adherence is behavior that refers to client obeys in following a medication, and makes lifestyle changes in accordance of recommendations from health care providers. Antiretroviral adherence is paramount for HIV/AIDS patients. The effects were often a problem in antiretroviral treatment and toxicity and often be the reason for replacing or stopping antiretroviral treatment. This study aimed to determine the "E-Patuh" Applications effect on antiretroviral adherence in patients Of HIV/AIDS In West Java. The research design was a quasi-experimental with nonequivalent control group design. The location of this research was in RSUD Kota Bandung and in RSUD Kota Banjar. The respondents was selected without randomization and used purposive sampling technique. Respondents in this study were 30 respondents. Data were obtained using self-report questionnaires. The intervention group was monitored a 30-day android-based E-Patuh application and monitored on an E-Patuh website and then measured adherence value with self-report. Data were analyzed using SPSS 22 with chi-square test. The results showed a significant difference between adherence value before and after application of E-Patuh in the intervention group with ($p < 0.05$) with obtained p value = 0,006. The results of this study prove a positive effect on the using of E-Patuh applications against ARV medication adherence in the intervention group with the support system of the E-Patuh application. The used of E-Patuh is helpful in improving ARV adherence in HIV/AIDS patients. The features contained in E-Patuh were directly reminiscent of the timing of taking medication for PWLH. E-Patuh should be consideration for PLHIV and health care providers in hospitals to improve ARV adherence to reduce mortality rates in people living with HIV.

Keywords: Adherence, Antiretroviral, E-Patuh Applications.

Introduction

Human Immunodeficiency Virus (HIV) is a virus that attacks leukocyte (lymphocytes) in human body and causing acquired immune deficiency syndrome (AIDS) (Kemenkes, 2014). HIV/AIDS is a complex chronic disease. The number of HIV in Indonesia in the fourth quarter of 2017 was 14,640 and AIDS was 4,725 people . The highest AIDS percentage at 30–39 years (35.2%), followed by 20–29 years your (29.5%) and 40–49 years (17.7%). West Java is the third highest number of HIV infections in Indonesia in the period of March 2016 amounted to 28,964 people and the number of AIDS in West Java was ranked sixth in Indonesia with 6,502 people.

The development of using antiretroviral therapy as a treatment of choice in HIV/AIDS has significantly improved the health condition of HIV people. Palella et al. (1998) explains that ARVs have illustrated that HIV/AIDS patients can be treated, to reduce the morbidity, mortality and improve quality of life. Hypersensitivity reactions to antiretroviral drugs are more common in HIV patients than in other general disease populations. The reasons why people with HIV experience hypersensitivity reactions to antiretroviral medications are more often multi-factor, such as immune hyperactivity factors, changes in medication metabolism, profilesocytes, oxidative stress, and genetic predisposition (Nursalam, 2007).

The medication effects should not be an obstacle to starting antiretroviral therapy. Not all patients have effects of arising from the ARV treatment. ARV treatment is beneficial when compared to the risk of morbidity and death that would occur if the patient did not get ARV therapy (Kemenkes, 2011).

The level of antiretroviral adherence in Indonesia is low, with a range of 40–70% still below the national target of adherence > 95% (Latif, Maria, & Syafar, 2014). Kemenkes (2017) showed the number of people living with HIV who were getting ARVs in the fourth quarter of 2017 was 91,369 people. The total of 88,386 people used first-line regimens, 2,983 people receiving second line and 2,983 people was drop out of medication.

Cohen et al. (2011) said Disobedience in the treatment of antiretroviral medication has a significant impact on patients who live it, such as the onset of symptoms that aggravate the state of the patient. Technology developments on ARV adherence interventions have been used in PLHIV including of pager, smartphone, SMS, video, computer-based programs and the development of behavioral intervention technology intervention technology (BITs) to improve ARV compliance (Pellowski & Kalichman 2012). Along with the development of existing interventions, nurses should play a role to increase ARVs adherence. Dayer et al. (2013) and Whellan et al. (2013) explained that their study focus on improving to ARVs adherence, providing educational information on ARV medication treatment and HIV/AIDS information based on electronic monitoring system.

In this study The E-Patuh application is developed from the existing electronic monitoring system applications based on Android and website system with Google servers to store patient's data. The features are improving of medication adherence and document medical history, CD4 history, and symptoms experienced by PLWHA during medication treatment. The forms of the report are immediately sent and documented in the "E-Patuh" website application system. E-Patuh Supported with reminders and notifications to remind people living with HIV to take medication on time.

Method

This study used quasi experimental with nonequivalent control group design approach with experimental group (A) and control group (B). The value of ARV medication adherence was measured in pretest and posttest. The experimental group was given intervention by using E-Patuh android application as user and then readied for respondent's smartphone. The Experimental group was conducted in Ujung Berung Hospital. For the control group were not given intervention in the form of E-Patuh android application and was conducted in Banjar Hospital. This study would evaluate the treatment of E-Patuh in a month.

The sample technique in this research used nonprobability sampling with purposive sampling. The numbers of experimental group were 15 respondents and 15 respondents for control group without any randomization in each group. The data were tested statistically to determine the difference of scores in the intervention group and control group on pre-test and post-test using chi square test of SPSS program to measure the pairs of nominal data or dichotomy (Dahlan, 2015).

This study used indirect measurement methods in the form of self-report using the Morisky Medication Adherence Scale (MMAS) questionnaire. Measurement of ARV medication adherence used the self-report questionnaire was developed with a four-item scale of questions and supplemented with additional items that discussed the circumstances surrounding compliance behavior. The questions were measured by 4 items, namely 1. Are you sometimes having difficulty remembering the time to take medicine?, 2. When you feel good, do you sometimes stop taking medicine?, 3. Think four days back, have you missed it Taking medicine?, 4. At times when your condition feels worse, do you stop taking medicine?. The question category was responded to yes/no for each item with a response dichotomy (Morisky, Ang, Krousel-Wood, & Ward, 2008).

Result

Table 1 The Respondent's Characteristics

Characteristic	Group				p
	Intervention		Control		
	f	%	f	%	
Age (Old):					0.247
17–20 years	6	40	3	20	
21–40 years	5	33.3	8	53.3	
40–60 years	4	26.7	4	26.7	
Gender:					0.000
Male	14	93.3	7	46.7	
Female	1	6.7	8	53.3	
Married Status:					0.161
Married	3	20	6	40	
Single	10	66.7	7	46.7	
Divorce	2	13.3	2	13.3	
Education:					0.638
Elementary	1	6.7	-	-	
Middle	3	20	3	20	
High	9	60	6	40	
University	2	13.3	6	40	
Work:					0.593
Private employees	7	46.7	9	60	
Entrepreneurship	3	20	1	6.7	
Unemployment	3	20	1	6.7	
Laborer	1	6.7	1	6.7	
IRT	1	6.7	3	20	
Duration of ARVs:					0.091
15 years	10	66.7	3	20	

6 – 12 months	5	33.3	6	40	
5 – 10 years	-	-	6	40	
Type of ARV					0.036
3FDC	10	66.7	11	73.3	
Lamipudin, Tenopovir, Evafiren			1	6.7	
Duviral dan evafiren			2	13.3	
Lamifudin, neviral, TDF			1	6.7	
Duviral dan neviral	5	33.3			
Side Effects of Treatment:					0.521
No complaints	7	46.7	1	6.7	
Nausea	2	13.3	8	53.3	
Dizziness, nausea	-	-	6	40	
Rash	1	6.7	-	-	
Dizzy and limp	5	33.3	-	-	

p < 0.005 (homogeneity test)

Table 2 Pretest Score the ARV adherence in Intervention and Control Group

Group	Adherence Level			x^2	p
	High	Medium	Low		
	f (%)	f (%)	f (%)		
Pre- test intervention group	6 (40.0)	5 (33.5)	4 (26.5)	2.812	0.245*
Pre-test control group	12 (80.0)	3 (20.0)	-		

** chi square test p < 0.05*

Table 3 Posttest Score the ARV adherence in Intervention and Control Group (n = 30)

Group	Adherence Level			x^2	p
	High	Medium	Low		
	f (%)	f (%)	f (%)		
Pre- test intervention group	8 (53.3)	7 (46.7)	-	6.234	0.013*
Pre-test control group	11 (73.3)	4 (26.7)	-		

** chi square test p < 0.05*

Table 4 Pretest and Posttest Score an ARV Adherence in Intervention Group (n = 15)

Group	Adherence Level			x^2	p
	High	Medium	Low		
	f (%)	f (%)	f (%)		
Pre- test intervention group	6 (40.0)	5 (33.5)	4 (26.5)	10.179	0.006
Pre-test control group	8 (53.3)	7 (46.7)	-		

** chi square test p < 0.05*

Table 5 Pretest and Postest Score an ARV adherence in Control Group (n = 15)

Group	Adherence Level			x^2	p
	High	Medium	Low		
	f (%)	f (%)	f (%)		
Pre- test intervention group	12 (80.0)	3 (20)	-	3.068	0.080
Pre-test control group	11 (73.3)	4 (26.7)	-		

** chi square test p < 0.05*

The table 1 describes the characteristics of respondents between the intervention and control groups. The study showed the most respondents were range of aged 21–40 years (53.3%) and almost all respondents in the intervention group were male (93.3%). The marital status data most of the respondents were single on intervention group 66.7% and 46.7% for control group. Most of the respondent was senior high school with 9 people (60%), private employment amounted to 9 people (60%). Most of the respondents suffered from HIV-positive people and underwent ARVs within 1–5 years at 10 (60.7%) in the intervention group. Most of the 3FDC ARVs consumed by all respondents were 21 respondents. 1 person (6.7%) of the control group did not have antiretroviral side effects but in the intervention group. a small percentage of 1 (6.7%) of the respondents had side-effect rash on the skin.

Pretest intervention and control group using chi square test showed on the table 3 and the result obtained p value = 0.245. Since p value 0.05 hence statistically there is no significant difference of pretest score of ARV adherence medication level between group intervention and control groups. Pre-test adherence levels in the control arm were almost 12 (80%) in high adherence. Meanwhile, in the intervention group there are still respondents with compliance of less 4 (26.5%) of respondents.

Posttest in intervention and control group using chi square test on table 3 obtained p value = 0.013, because p value <0.05 then statistically there was significant difference in post test score of adherence medication intervention group antiretroviral drug and control groups. The post-test adherence level in the control group of 11 (73.3%) was in high adherence level and the intervention group had respondents with high adherence of 8 (53.3%) respondents.

In the test to know the difference of pretest and posttest in intervention and control group using categorical comparative analysis not paired by using chi square. Differences of ARV preoperative and posttest test compliance scores in the intervention group will be presented in table and the control group will be presented in table below:

Between pre-test in intervention group got small part of adherence value 4 (26%) of respondent with low compliance category at pre-test and at post-test there is no value of compliance of respondent in low adherence category. The result of statistic test with chi square test in table was obtained p value = 0.006, because p value <0.05 then statistically there is a significant difference between antiretroviral drug adherence level score before and after giving of E-Patuh application in intervention group.

In the test of difference between pretest and posttest in control group using chi square test in table 5 obtained p value = 0.080, because p value <0.05 hence statistically there is no significant difference between antiretroviral medication adherence level scores in group control before and after application of E-Patuh to the intervention group.

Discussion

This study prove a positive effect of E-Patuh applications against ARV medication adherence on the intervention group. The features provide reminder of taking the medicine for respondents in real time, enlarge the knowledge's, to guide the patient for health care provider in West Java and changes the patient behavior in ARV medication.

Several methods have been developed to improve ARV adherence by building up the android and website monitoring system. Study of Dayer's et al. (2013) shows the methods of changing patient behavior using reminders, counseling, strengthening, education, simplifying the dosage, or combining those methods. In general, the compliance interventions are categorized as behavioral, educational, or organizational based on modifying the environment or patient, delivering information, or reducing the risks that impede treatment and establish communication with health care providers.

A similar study Zia's (2014) on the implementation of ARV antiretroviral monitoring system by smartphone-based client server method shows three respondents stated strongly agree that the reminder helps to remind ARV medication. The respondent agree that the message feature can facilitate

for communicating with the clinic staff while on ARV therapy, to help the officer in the process of collecting the results of CD4 examination, determines the consumption schedule and facilitates communication between the officer and the patient during the ARV therapy. Dayer's et al. (2013) again illustrates the potential benefits of smartphone technology to increase effectiveness in compliance programs, refine financing, as a real-time tool for evaluating medication adherence.

The study of electronic monitoring system became good opportunity in the modernizing of information and telecommunication tools in health community. The expansion of information and technology should be in line with utilization in the field of health specially in monitoring the system for ARV medication adherence to patients who living with HIV.

After giving for a month of E-Patuh application to the intervention group on 15 respondents and remain active using E-Patuh application the respondent still get the medication adherence intervention in the form of reminder with alarm and notification time of taking the medicine on time. While using the E-Patuh application researchers have submitted articles on HIV/AIDS to be able to provide information and education about the importance of medication adherence and educate the respondents' understanding of HIV/AIDS.

After using E-Patuh during the treatment package program, it was found that 5 respondents still had difficulty remembering the time to take medication but on the other hand there were increasing of adherence to 6 respondents who before using E-Patuh had trouble often skipping medication within four days. This compliance improvement is evidenced by no respondents claiming to have a problem with taking time to take medication time during the use of E-Patuh.

The E-Patuh application is an android-based smartphone app and website that is connected with internet network that can access communication, information and as remainder. This technology provides the principle of benefit to PLWHA to improve the behavior of obedient to ARV. The features contained in the E-Patuh application can enhance compliance by providing remainder or alarm to take medication so that they can directly change their behavior by providing health promotion through APP, providing information on medication schedule, education delivery, and health service information. All information and education provided can be known by the notification that goes into android system of PLWHA.

The descriptive result indicates the level of adherence to taking antiretroviral drugs before and after the administration of the E-Patuh Application in the control group. From the table shows almost all the respondents have high adherence with the amount of 12 (80%) in the control group pre-test. After the provision of E-Patuh application in the intervention group showed that there was a decrease in compliance rate of PLHIV as evidenced by the compliance level in the control group with the high adherence category amounted to 11 (73.4%). The level of education in the control group was partially educated at university level with 6 (40%) respondents and SMA 6 (40%) respondents. The level of education in the control group tends to be better so it has better pre-test and post-test compliance percentage.

The effects of antiretroviral treatment in the control group were mostly 8 (53.3%) respondents felt nauseated. As a result of side effects of ARV treatment one of the factors that inhibited adherence to the control group said 2 respondents discontinued treatment when physically felt better. This research is supported by research of Sugiharti, Yuniar, and Lestary (2014) which get nausea, fever, rash made ODHA cannot stand side effect so decided to stop treatment.

Marital status in the control group married one of the social support factors to the support system of respondents in ARV adherence with 6 (40%) of respondents. In line with Galistiani and Lia (2013) say social support especially in the context of intimate relationships or the quality of marriage and family relationships is the most important source of social support. Social support from people around the patient can be a boost to HIV treatment adherence.

In this study, the extent of ARV adherence in general is quieted <95% below the national target. It will have an impact on the spread or suppression of HIV virus to PLHIV. With the

issue, WHO and the Ministry of Health through a system of curing with this prevention, care and treatment program emphasize that ongoing care and with attention to ARV adherence can suppress the virus in the body, reduce the risk of transmission to others, help people living with HIV and help keep long life (Kemenkes, 2017).

Given that antiretroviral therapy is a lifelong therapy, then the problem of treatment adherence was a common problem. Various studies show obstacles to obstacles such as fear of side effects, forgetfulness, unhealthy lifestyles, poor health conditions, missing medicine boxes, lack of personal awareness, opportunistic infections, daily activities, economic problems insufficient income for ARV treatment, unemployment, and fear of stigma. While adherence supporters, among others, have a regular schedule of taking medication, understanding the importance of adherence, getting good treatment results and confidence in the treatment process (Yuniar, Handayani, & Arsyastami, 2012).

Technological developments cannot be denied so quickly and rapidly in all aspects of human life. This becomes an opportunity and a challenge for us especially in the field of health. The demand of technological development with the internet network in the health world leads the health service system in paying attention to the compliance of antiretroviral programs for PLHIV. Utilization of technology in the field of health services in hospitals or in the community, especially for PLWHA will assist PLWHA in undergoing a life-long antiretroviral regimen program, facilitate access to health services, delivery of information and education, time efficient and financing in various aspects of service. Acceptance of technology based on android and website in it the use of E-Patuh application to PLWHA will guide some aspects of knowledge, attitude of PLWHA in antiretroviral treatment program so that ODHA become know, understand and able to change behavior in taking decision during undergoing ARV treatment program.

Taiwo and Downe (2013) said that in Technology Acceptance Models And Theories argue that interaction between humans and technology will affect the social and psychological factors of individuals and even individual characteristics. A similar opinion is supported by the theory of Acceptance Technology Model (TAM) by Davis (1989) is a model for predicting individual acceptance of a new technology. TAM is actually adopted from the theory of reasoned action model (TRA) by Ajzen and Fishbein (1975), the theory of action with one premise that reactions and perceptions of a person to something that will determine the attitude and behavior of the person.

Differences in adherence levels of PLHIV pretest and posttest in both groups tended to better control group. This can be influenced by some external and internal support factors in the patient so as to perceive and behave toward something that can improve compliance. External support factors are employment, most respondents work as private employees in the control group of 9 (60%) of respondents and intervention groups 7 (46.7%) with varying salary. A minority of 3 (20%) of the respondents in the intervention group were unemployed so that the work factor could be a factor in the intervention group had less compliance than the control group because the work would affect income to meet the needs of antiretroviral treatment. Although ARV programs are free but access to ARVs requires financing. This study was supported by Wulandari (2015) study which stated that insufficient income made respondents did not routinely come to take the medicine, and vice versa respondents with middle to high income and work become private employees tend to always actively come to take antiretroviral drugs.

Conclusion

The growth of technology becomes good change for people living with HIV to be more effective in ARV medication program. PWLH needs the program for monitoring their ARV medication. The implementation E-Patuh based android and website system had positive outcome for increasing ARVs medication adherence.

After using E-Patuh during the treatment package program, it was found that 5 respondents still had difficulty remembering the time to take medication but on the other

hand there were increasing of adherence to 6 respondents who before using E-Patuh had trouble often skipping medication within four days. This compliance improvement is evidenced by no respondents claiming to have a problem with taking time to take medication time during the use of E-Patuh. . The ARVs adherence medication score in control group were relatively better at the beginning. Although in the control group there were no less adherence categories for the respondents, but the control group experienced a decrease in adherence after posttest. There were 2 respondents who expressed difficulties remembering the time of taking the medicine and 1 respondent said sometimes stop treatment if feeling better. Patient compliance issues in this control group tend to be time-dependent and the prevalence is low in pre-test. Different when done post-test after obtained 2 respondents expressed difficulties remembering taking medicine and 2 respondents stated stop treatment if feeling better.

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Factors that Correlate with The Health Services Seeking on Breast Cancer Patients

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Abstract

Most cases of breast cancer are found to be in an advanced stage. This is because of the patient delay in coming to health service after the emergence of early symptoms of breast cancer. It is necessary to identify factors that allegedly prevent patients from seeking health services as early as possible. The purpose of this study was to analyze factors related to the search for health services. This research used cross-sectional method. The population of this study was breast cancer patients where the sampling technique using consecutive sampling with the number of samples researched as many as 100 people. Data were obtained through a reliable questionnaire to use (Alpha Cronbach's questionnaire = 0.92, Alpha Cronbach's health questionnaire = 0.85). Analysis of this research data using univariate (frequency distribution), bivariate (Chi-Square) and multivariate (logistic regression).The result of bivariate analysis showed that the variables related to health seeking behavior are education (ρ value = 0.02; r = 0.3) and health belief (ρ value = 0.01; r = 0.24). While the variables that most related to health service seeking behavior was health belief (ρ value = 0.02) and OR value 3.46. This could be caused by patient's health belief in which the patient assumes that the symptoms were not dangerous and the choice of alternative medicine as the first choice and the patient's fear of treatment due to lack of information that obtained by the patient. It can be concluded that health beliefs are the most correlated factor with health-seeking behavior so it is necessary to consider the prevention efforts of breast cancer especially related to health belief. Community beliefs about routine health checks should be key interventions such as counseling and discussions with the community regarding the importance of routine health screening as part of early detection of disease.

Keywords: Breast Cancer, factors, health beliefs, health seeking behavior.

Introduction

Breast cancer is one of the health problems that cause a high number of morbidity and death in women. This is reinforced by data shown by Yang Liu, Jian Zhang, Rong Huang, We-Liang Feng, Ya-Nan Kong et al. (2017), where it is estimated that about 15% of deaths in women in the world are caused by breast cancer. Not only in the world level, Indonesia also has a high incidence of breast cancer (Yang Liu et al., 2017).

Based on the data from Infodatin Kemenkes RI (2015), breast cancer, especially in Indonesia is cancer with the highest percentage of new cases that reached 43.3% with the percentage of death reached 12.9%. Based on the data obtained from Bandung Health Department, the incidence of breast cancer in the city of Bandung is still high. The number of breast cancer patients from year 2014 to 2015 has increased from 239 cases to 523 cases. Despite the decline in the number of breast cancer cases from 2015 to 2016, the incidence of breast cancer cases is still high in 459 cases (Infodatin Kemenkes RI, 2015, Bandung Health Department, 2016).

The earlier treatment of breast cancer might be beneficial to reduce morbidity and mortality rate. Not only is needed treatment done as soon as possible, prevention is needed to reduce the rate of breast cancer in the late stages. he results of the research conducted by Unger-Saldana et al. (2015) showed that most of the respondents in their study (45%) were diagnosed as having advanced stage III and stage 4. This could be caused by various factors such as the delay of the patient themself to seek treatment and delay in diagnosis of the system health services (Unger-Saldana et al., 2015)

Some actions can be done in preventing the occurrence of breast cancer such as implementing a healthy lifestyle and breast self-examination regularly, especially for women aged over 50 years. Unfortunately, prevention behavior like breast self-examination has not become something that is needed and important to be done by women. It can be seen from a research conducted by Kusumawati and Miasari (2014) which shown that someone who does not have a family history with breast cancer, 55% among them do not do breast self-examination as a form of early detection of breast cancer (Putri, 2015; Kusuwamati & Miasari, 2014).

The high number of women who did not make early breast cancer detection efforts had an influence on the discovery of breast cancer cases diagnosed in an advanced stage (Wang,2017). Mirfarhadi et al. (2017) in his study explains that there is one predictive factor that is significantly related to the delay of diagnosis and treatment in breast cancer patients one of which is not doing breast self-examination (SADARI) (Mirfarhadi et al., 2017).

Symptomatic patients who do not receive immediate medical help may be diagnosed with cancer in an advanced stage. Advanced stages of breast cancer will affect the quality of life and the prognosis of the patients. In stage I, the patient has a 70% chance of recovery so that the quality of life is not too disturbed. In stage II the possibility of recovery is 30-40%, which causes the quality of life at this stage began to be disturbed, especially physical and psychological problems. In stage III, the likelihood of life is low so the quality of life decreases. In stage IV, therapy is not very meaningful, causing the quality of life to be very bad. This indicates that the impact of the more late a person is diagnosed with cancer will affect the poor quality of life of the person (Moatter et al., 2015).

The lower mortality rates of breast cancer compare to the morbidity rates indicates the possibility of cancer recovering if it detected and handled earlier. About 30-50% of cases of cancer recently can be prevented (WHO, 2017). This can be achieved through behaviors that stay away from risk factors and the implementation of prevention strategies from existing research evidence. The burden of cancer can be decreased through early detection and good management to prevent further progressing of cancer that have a high chance of being cured if diagnosed early and treated adequately (WHO, 2017).

The results of a study by Wang (2017) showed a similar data which that early cancer detection will reduce the number of further pain and mortality caused by breast cancer significantly. The most important point for a good prognosis in cases of breast cancer is to identify the presence of cancer cells in the

early stages. There are now many approaches or actions to diagnose breast cancer as early as possible. Unfortunately, at this time almost 80% of cases of breast cancer in Indonesia diagnosed or known by health workers when it entered the advanced stage. This can be due to one of them by the expensive diagnostic checks that need to be done, takes a long time and is considered unsuitable for young women (Wang, 2017).

The number of cases of breast cancer found in advanced stages is caused by the delay in making decisions when they should go to health services (Glenz et al., 2002). Decision making of a person to visit or utilize existing health services is influenced by several factors that are important to be known, especially by health provider. There are many health models applied in the nursing practice such as Behavioral Model of Health Service Utilization to understand the attitudes and values of clients on health and disease, and to provide effective health services (Glenz et al., 2002; Notoatmodjo, 2012).

Theoretical approach of the Behavioral Model of Health Service Utilization allows to assist health professionals, especially nurses, where the use of this theory allows for an illustration of the relationships between the determinant factors of the use of health services, alleviating the forecasting of future needs on health services, determine the presence or absence of services from the use of health services that are one-sided, suggest ways of manipulating policies related to variables in order to provide better health services especially for breast cancer patients (Glenz et al., 2002; Notoatmodjo, 2012). This theory explains that there are three main factors that influence health service utilization behavior including predisposing, enabling, and need factor. Predisposing factors are factors inherent in the individual itself (such as age, sex, marital status, race, education, family type, occupation, health knowledge and beliefs). The enabling factors explain the individual's capabilities and the means by which the individual may utilize health care facilities (such as family income, health insurance ownership, access to health services and available health services). As for the need factor is a factor where a new person utilizes health services when individuals feel disturbed by his health condition (Glenz et al., 2002; Notoatmodjo, 2012).

Health workers, especially nurses, need to analyze the process from the beginning of the onset of symptoms until the patients get treatment for breast cancer so the nurses know the factors that affect the patient's delay in obtaining medical help. There are two main factors that affect the delay of breast cancer patients to come to the health service including internal factors derived from within the individual itself and external factors originating from outside the breast cancer patients (eg. family) and health organizations that can facilitate early detection of cancer (Brousselle et al., 2017).

Factors included in the internal factors include the knowledge factor of the patient where the average patient does not know that a lump that appears is something that must be checked immediately so that when the symptoms appear most of patients do not take care it seriously. In addition, the presence of excessive fear and anxiety also became one of the obstacles of breast cancer patients to immediately check the situation when first appeared symptoms such as a lump in the breast (Anggraeni, Ngatimin, & Arsin, 2012). While that includes into external factors such as inequity access to the diagnosis that affects the early detection of cancer and family factors that also have an important role in decision making patients to come to health services. Families are the main drivers for their self-examination but breast cancer patients tend to ignore the invitations of their families. The suggestion from the study says that there needs to be a deeper involvement of health workers, especially in the field of better health promotion so that knowledge does not cause anxiety or excessive acknowledgment in patients (Brousselle et al., 2017, Anggraeni et al., 2012) .

In contrast to previous research results, Hikmanti et al. (2007) in his study said that there is no significant relationship of knowledge, work, fear, family support, health insurance, medical treatment costs, medical treatment other than hospital, family history and education of respondents to delayed treatment of breast cancer. This is made possible by other factors such as factors from local community leaders or factors of

health workers who have an influence on the immediate medical search behavior of breast cancer patients (Hikmanti et al., 2007).

West Java is the third highest province for most cases of breast cancer in Indonesia after Central Java and East Java. Therefore, it needs special attention by health workers, especially regarding the delay in breast cancer patients to be diagnosed in the early stages so as to facilitate treatment and increase the likelihood of recovery. According Pahria (2017) West Java is the province with the largest population in Indonesia where approximately 49.3% of its citizens are female. About 0.5% of women in West Java have breast cancer and predicted about 9.6% of young women in West Java are at risk of developing breast cancer. This needs to be an important concern for nurses in order not to increase the incidence rate of breast cancer in West Java (Pahria, 2017).

Nurses can play an active role in decreasing the incidence of late diagnosis in breast cancer patients. Nurses can play an active role in preventing late diagnosis in breast cancer patients especially in the prevention phase that focuses on groups at risk of developing breast cancer. Nurses can screen women who have a history of breast cancer and behaviors that are at risk for breast cancer (eg. smoking) where the nurse reviews risk group knowledge about signs and symptoms that need to be alerted towards breast cancer and invites the risk group to routinely perform breast self-examination behavior (check breast itself) and within a certain timeframe perform a radiological examination that can detect early breast cancer (Melo et al., 2017).

Based on some data from the results of research conducted by Brousselle (2017), Wang (2017), and Hikmanti (2007) where there are still some differences related factors that affect the decision making of breast cancer patients (especially factors knowledge, fear and support family) to visit health care facilities as early as possible and in West Java itself is not known for sure the underlying factors of decision making treatment of cancer patients, especially for patients in the city of Bandung.

Researchers are interested to know what factors and what the main factors behind a person late diagnosed breast cancer, especially in the area of West Java. Through this research is expected to get a picture of the constraints of patients come to health services when the initial symptoms of breast cancer appear. By knowing it is expected to be done in the future secondary preventive efforts where health workers try to prevent cancer develop and cause complications or cause severity that will affect the quality of life of patients with breast cancer that will also affect the possibility of patients getting closer to the death as well it is expected that in the future patients who have symptoms of breast cancer in the early stages can be known as soon as possible so that healing efforts can be done more leverage.

This study aims to examine factors related to the search for health services in breast cancer patients with the specific aim of analyzing the relationship between predisposing factors: age, marital status, history of breast cancer, education, occupation, health knowledge and beliefs with health seeking behavior behavior as soon as possible in breast cancer patients; analyze the relationship between supporting factors: income, access to health services and ownership of health insurance with health seeking behavior as soon as possible in breast cancer patients; and analyze the factors most closely related to the search for health services as soon as possible by breast cancer patients.

Method

This study a cross-sectional study design with a total sample of 100 breast cancer patients that obtained from the cross sectional study sample calculation formula. The location of this study was in the working area of Bandung City Health Office and Cancer Stop Home in Sukajadi District. The data had collected from March to June 2018. Data collection techniques were conducted by distributing questionnaires to respondents to find out factors related to health service search behavior in breast cancer patients.

Data Analysis

Univariate analysis was done to describe the frequency distribution of several variables by calculating the median value of the total score of the respondents of each

variable. Bivariate analysis was done to see the relationship between two variables (independent and dependent variables) using Chi-Square test. Multivariate analysis was done using logistic regression test. The data was analyzed using a statistical software.

Result

Predisposing Factors with Health Service

Table 1 Cross-Tabulation Between Predisposing Factors and Health-Seeking Behavior (N = 100)

Variables	Health service seeking behavior				ρ value	X^2
	≥ 3 months		< 3 months			
	(f)	(%)	(f)	(%)		
Age						
> 40 years	60	60.00	22	22.00	0.30	1.04
≤ 40 years	11	11.00	7	7.00		
Marital status						
Married	70	70.00	29	29.00	1.00	0.00
Single	1	1.00	0	0.00		
Education						
≤ High school	69	69.00	24	24.00	0.02*	4.55
> High school	2	2.00	5	5.00		
Occupation						
Working	26	26.00	16	16.00	0.08	2.90
Not working	45	45.00	13	13.00		
Family history						
No	70	70.00	26	26.00	0.07	2.27
Yes	1	1.00	3	3.00		
Knowledge						
Less knowledge	28	28.00	11	11.00	0.89	0.02
Good knowledge	43	43.00	18	18.00		
Health belief						
Negative	39	39.00	8	8.00	0.01*	6.18
Positive	32	32.00	21	21.00		

Table 2 Cross Tabulation Between Enabling Factors and Search Behavior Health Services (N = 100)

Variables	Health service seeking behavior				ρ value	X^2
	≥ 3 months		< 3 months			
	(f)	(%)	(f)	(%)		
Income						
< Regional Minimum Wage	66	66.00	23	23.00	0.07	2.64
≥ Regional Minimum Wage	5	5.00	6	6.00		
Health insurance						
No	1	1.00	0	0.00	1.00	0.00
Yes	70	70.00	29	29.00		

Access to health service						
Unaffordable	14	14.00	4	4.00	0.48	0.49
Affordable	57	57.00	25	25.00		

Table 3 Multivariat Analysis of Health Service Seeking Behavior

Variable	Coefficient	P	OR (CI 95%)
Education	1.27	0.19	3.56 (0.53-23.81)
Occupation	-0.60	0.23	1.83 (0.20-1.48)
Family history	-1.82	0.17	0.16 (0.01-2.22)
Health belief	1.24	0.02	3.46 (1.24-9.62)
Income	0.57	0.44	1.77 (0.41-7.65)
Constant	-0.33	0.06	0.72

Search Behavior

Table 1 above showed some variables that influence the delay in the seeking for health services (≥ 3 months). The delay in the seeking for health services is mostly found in respondents aged > 40 years (60.00%). Among marital marriage status, those status with married status (70.00%) showed a higher percentage on health service seeking behavior. Among occupation group, respondents who were not working showed a higher percentage on health service seeking behavior (45.00%). Among family history group, respondents that had no history of breast cancer in the family showed a higher percentage on health service seeking behavior (70.00%). Among knowledge group, respondents that had a good knowledge of breast cancer showed a higher percentage on health service seeking behavior (43.00%), and had negative health confidence showed higher percentage on health service seeking behavior (39.00%). While the results of Chi Square test showed that predisposing factors that have relationship with health service search behavior is the variable of education and health belief. While the variable age, marital status, occupation, history of breast cancer and knowledge there is no relationship with health seeking behavior in breast cancer patients

Enabling Factors with Health Service Search Behavior

From table 2 above shows that the delay in the search for health services (≥ 3 months) mostly occurred in respondents with income < regional minimum wage (66.00%), health insurance (70.00%) and access to affordable health services (57.00%). While the results of Chi Square test show that of the three supporting factors of income, ownership of Askes and Askes to health services all three have no relationship with health service search behavior.

Variable that have significant correlation with health service seeking

Of the five influential variables, health confidence was the only variable that significantly correlated with the health service seeking with the odd-ratio of 3.46. This means that breast cancer patients who have positive health beliefs will conduct health service search as soon as possible 3 times higher than patients who have negative health belief, after controlled variable education, occupation, income and history of breast cancer in the family.

Discussion

Predisposing Factors with Health Service Search Behavior

Based on education, respondents who experienced the most delay in the search for health services were respondents with low education level (≤ high school). In this study, there was a relationship between education and health seeking behavior in breast cancer patients. This means that the higher the level of a person's education, the higher possibility not to be late in searching for health services. Yang Liu et al. (2017) in his research that

women who have lower levels of education were likely to have poorer quality of life. People with low education usually live in areas far from urban and technological advancements in which one is difficult to be exposed to the possibility of early breast cancer screening so that the risk of delay in the search for health services and the diagnosis of breast cancer is higher in women with lower levels of education.

Based on the health beliefs, respondents experiencing delays in the search for health services were those who have negative health beliefs (39.00%). In this study, there was a relationship between health beliefs and delay in the search for health services. This may be due to several factors such as the patient presuming that the symptoms were not dangerous, the selection of traditional medicine as the first treatment, and the fear of breast cancer examination and treatment (Brousselle et al., 2017). Symptoms that appear were often regarded as something that was not dangerous because in general, the initial symptoms were felt like a lump does not cause pain so that they regarded it as something that was not harmful. Selection of treatment were the most of the respondents said they had undergone traditional treatment first before finally choosing medical treatment. As Rahayuwati's et al. study (2016) stated that the selection of therapies for breast cancer patients was influenced by the families and the environment. This was a lot happening in the community where people were more confident in what was widely spread in the community through word of mouth including traditional medicine that grows around the community. Fear of treatment also became one of the factors that influence the respondent's belief in health. Like chemotherapy treatment, many patients got information from the neighborhood around the dwelling that chemotherapy was a terrible treatment when it is well prepared then the side effects can be minimized.

Enabling Factors with Health Service Search Behavior

Based on the income, respondents who experienced the most delay were respondents with income < regional minimum wage (66.00%). In this study there is no relationship between income and health seeking behavior in breast cancer patients. This means both women who have enough or insufficient income allow for late in searching for health services after the initial symptoms of breast cancer appear. Women who have enough income allow higher rates for early detection of breast cancer. But the economic status of a good economy is usually associated with a good job that allows to have a busy enough and not too concerned with health problems themselves. Women who have less income are more likely to be late in searching for health services because they do not have the cost to come to health services (Arndt et al., 2002).

Based on the ownership of the health insurance, respondents who experienced the most delay in the search for health services were the respondents who had health insurance (70.00%). In this study there is no relationship between the ownership of the health insurance and the delay in conducting health service search. This can be interpreted that people who have health insurance is not necessarily searching for health services as soon as possible. Rossalia and Wibawa (2016) in his research mentioned that patients who do not have Askes tend to be late in searching for health services because of the limitations in terms of the cost of treatment for breast cancer costs considerable. While in this study, most of the respondents who experienced delays precisely the patients who have health insurance. This is because the fear of treatment is greater, they tend to choose an alternative treatment that usually the side effects of treatment is very minimal. Most respondents also feel that the symptoms of the illness are not so dangerous that when the respondent feels no pain, the health costs borne by the government will not guarantee the patient to come to the health service as soon as possible.

Based on access to health services, respondents who experienced the most delay in the search for health services were those who said access to health services was still affordable (57.00%). In this study there is no relationship between access to health services and health service search behavior. This can mean that the patient whose residence is close to the health service is not necessarily go to

health services as soon as possible. Brousselle et al. (2017) in his research stated that so far the closest health facilities to the community residence usually have poor infrastructure facilities and less complete so that patients need time to come to health services that can diagnose diseases such as breast cancer.

Variable that have significant correlation with health service seeking

Health confidence is the most influential variable among other variables because in this health belief includes several factors that affect the behavior of a person such as the perception of the disease and the fear of an examination. So when a person feels that he is healthy when in fact there is a health problem and not immediately done the examination then this is the cause of a late person in searching for health services. The results of this study also indicate that breast cancer patients who have negative health beliefs will not conduct health service search as soon as possible 3.46 times higher than patients who have positive health beliefs.

The role of health workers is considered very important because when the patient considers the initial symptoms that appear is not a dangerous thing is required suatau prevention efforts to the wider community so that people assume that the symptoms that appear is not a thing that is not dangerous but is something that should be suspected and conducted examination as a state probably by health personnel.

Conclusion

Based on the results of research conducted can be drawn conclusion as follows:

1. Predisposing factors that have relationship to health seeking behavior are health education and belief. The age variable, marital status, occupation, history of breast cancer and knowledge have no relation to health seeking behavior in breast cancer patients.
2. The three variables in the supporting factors of income, ownership of access to health care and access to health services have nothing to do with health seeking behavior.
3. Based on the relationship between the overall variables obtained using logistic regression analysis, the variables most closely related to health service search behavior are health confidence variables.

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Effect of Nei Guan Acupressure Point as Adjuvant Therapy on Highly Emetogenic Chemotherapy-Induced Nausea-Vomiting in School-Age Children with Cancer

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Abstract

Chemotherapy as a pediatric cancer treatment has nausea and vomiting side effects. Nausea and vomiting in school-age children with cancer can lead to nutritional, emotional, playing, and school function disorders, decreasing the quality of life in children. An adjuvant therapy that can decrease chemotherapy-induced nausea and vomiting is acupressure which is non-invasive and safe. Nei Guan acupressure point uses pressure technique on the wrist. This study was conducted to determine effects of Nei Guan acupressure on nausea and vomiting due to highly emetogenic chemotherapy in school-age children with cancer. The study design was quasi-experimental through a pre-post test design study approach, with single-blind control. Thirty respondents obtained from the average calculation of two population hypothesis test, were divided into a control and intervention group comprising 15 people respectively. Both groups got the same antiemetic. Measurement of nausea was performed three times during the study using the Pediatric Nausea Assessment Tools (PeNAT), while vomiting intervals were documented for every vomiting and retching. Data analysis used the Mann Whitney and independent t-test. The analysis result in the control group showed that the average nausea value tended to increase and the vomiting interval was faster than in the intervention group. In conclusion, Nei Guan acupressure affects nausea and vomiting due to highly emetogenic chemotherapy in school-aged children with cancer although it is not statistically significant (p-value> 0.05). Nurses are expected to monitor ongoing nausea and vomiting, and consider acupressure as adjuvant therapy, besides providing pharmacological treatment to reduce nausea and vomiting.

Keywords: Acupressure, chemotherapy, nausea, school-age children, vomiting.

Introduction

The Ministry of Health of the Republic of Indonesia (2015) explains that cancer is included in non-communicable diseases and is the cause of around 8.2 million deaths in the world in 2012. WHO data (2016) revealed the prevalence of pediatric cancer is approximately 4% of all cancer cases, and child mortality in the world due to cancer is estimated at 90,000 children each year. The Indonesian Hospital Association Data and Information Center (PERSI) (2014) reports that 2–4% of cancer incidence in Indonesia occur in pediatric patients. It estimates that every year there are approximately 11,000 cases of childhood cancer, and about 10% of child mortality is caused by cancer.

Childhood cancer management includes surgery, chemotherapy, and radiotherapy. The therapy can be single or combined. Providing treatment through radiotherapy and surgery is a local therapy while giving treatment through chemo is a systemic therapy (Balduci, 2008). The primary goal of chemotherapy is to cure, control or reduce the growth of cancer cells (Price & Wilson, 2009).

The incidence of side effects in pediatric patients is bone marrow depression, diarrhea, stomatitis, hair loss, skin disorders, and vomiting and nausea (Apriany, 2010). Chemotherapy-induced nausea and vomiting are the most common side effect in children. The study of Millennials, Baraz, Baraz, Nourt, and Baeis (2015) explained that the prevalence of chemotherapy-induced nausea and vomiting in pediatric patients is 54% -96%. The most feared experience by patients is nausea, while in the third place is vomiting. The response of vomiting to chemotherapy can occur after emetogenic agents have chemically stimulated the vomiting center. Emetogenic agents directly stimulate the release of serotonin (5 HT3) from intestinal enterochromaffin cells to the Chemoreceptor Trigger Zone (CTZ) in the area postrema of the cortex and arouse the vomiting center, resulting in nausea and vomiting reactions (Rhodes & Mc Daniels, 2001). Related to this, chemotherapy drugs are classified into 4 emetogenic levels, which are high (> 90%), medium (30% – <90%), low (10% – <30%) and minimal (<10%) (Children's Oncology Group, 2015).

School-age children are the group at risk of experiencing nausea and vomiting. Batson et al. (2016) reveal that school-age children with cancer, who experienced nausea and vomiting after three months of chemotherapy show 24% increase in anxiety level and 28% in depression rate which results in emotional behavior changes, and nutritional disorders. This condition can interfere with the primary task of school children, namely fulfilling adequate nutritional needs, carrying out school functions and playing (Wong, Hockenberry, & David, 2011).

Nutrition is a top priority in the growth period of school-age children as at this age children need sufficient energy to think and move according to their developmental tasks (Ball, Bindler, & Cowen, 2012). Also, a study conducted by Nurhidayah, Hendrawati, Mediani, and Adistie (2016) found that 53.3% of school-age cancer patients had a poor quality of life with the lowest score on school functions due to chemotherapy-induced nausea and vomiting. The impact of nausea and vomiting on school function results in children often skip school, get quickly tired when attending lessons and have difficulty to concentrate while studying. The playing function impairment in school children may be caused by fatigue due to chemotherapy-induced nausea and vomiting.

The management of nausea can be performed by pharmacological and non-pharmacological therapy while the non-pharmacological management can be performed on pediatric patients as adjuvant therapy both in hospitals and at home as palliative care to improve quality of life. According to Suardi (2011), the use of complementary therapy can divert a person's uncomfortable perception so that a balance between body, mind, and spirit is expected to reduce the stress he/she faces. Nurses, as health workers can perform complementary traditional health services which are empirically beneficial and safe, as is stated in the Government Regulation of the Republic of Indonesia No. 103 the Year 2014, article 30 paragraph 2.

Some types of complementary therapy that can be executed in pediatric cancer patients are music therapy, food supplements

(herbal), aromatherapy, imaginary guidance and massage therapy (Ball et al., 2012). Massage therapy in the form of applying pressure to specific points has advantages over other treatments in reducing chemotherapy-induced nausea and vomiting in children can be performed in a caring room, is non-toxic, free of charge, harmless and does not use any media.

Acupressure uses fingertip pressure. The pressure is applied using the fingertips, beginning with mild stress then gradually the pressure is increased until a gentle but painless sensation is felt (Rusdiatin & Maulana, 2007). This therapy is derived from an acupuncture therapy based on the concept of ancient China that uses special needles to acupuncture points (Xie Wei) (Jie, 2008). The central principle in acupressure is to balance between yin and yang. In the human body, there is a meridian line (Jing Luo) which is a channel for flowing vital energy (Qi) and blood (Xue) and serves to connect Zhang Fu organs that are associated with four limbs (Sukanta, 2008). The choice of acupressure as a complementary therapy is safe and effective which can minimize the side effects of nausea and vomit with the pharmacological treatment provided (Hosseini, Tirgari, Forouzi, & Jahani, 2016). One of the acupressure points to reduce chemotherapy-induced nausea and vomiting is the Nei Guan point. A study conducted by Shen & Yang (2016) state that Nei Guan acupressure therapy can significantly increase energy on the meridian line by reducing severe vomiting nausea in cancer patients receiving chemotherapy. This acupressure point is easier to use in pediatric patients than other positions because the location of the pressure point is accessible, easy to learn, non-invasive and recommended for the recovery of the digestive tract (Miao et al., 2017).

Based on the previous explanation, the inference is that Nei Guan point acupressure can be performed quickly, effectively, and is well tolerated in pediatric cancer patients as adjuvant therapy. Acupressure is non-invasive, so it is not painful and is a touch therapy. The difference with the above research is that the study would be carried out by considering highly emetogenic chemotherapy and specific nausea and vomiting instruments to pediatric patients. This study aimed to determine the effect of Nei Guan acupressure point as adjuvant therapy for highly emetogenic chemotherapy-induced nausea and vomiting in school-age children with cancer.

Method

This research was a quantitative study with a quasi-experimental research design using a single-blind approach to pre-post test design study. The study was conducted at the Kenanga 2 Room, Dr. Hasan Sadikin Hospital Bandung in August-September 2017. This study obtained approval from the Health Research Ethics Committee of Universitas Padjadjaran with number LB.04.01/A05/EC/204/VII/2017.

The study subjects were obtained in parallel based on a randomized allocation list (randomization table) that was made without the knowledge of the researcher and was only known by the coordinator rater as the study was single blind. The selection of study subjects was through consecutive sampling technique based on specific criteria until the minimum number of study subjects was fulfilled. Inclusion criteria for the study subjects used in this study included obtaining highly emetogenic pharmacology, platelets > 50,000 / mm3, obtaining intra-vena or intrathecal chemotherapy.

The number of the study sample was 30 people obtained from the results of calculation of the average hypothesis test of two populations. The study sample was school-age children (6–12 years) who received highly emetogenic chemotherapy. The sample was divided into two groups, namely the control and intervention group as many as 15 people respectively. The control group received standard pharmacological therapy in the form of anti-emetic administration, while the intervention group received standard pharmacological treatment in the form of anti-emetic and intervention of Nei Guan acupressure as adjuvant therapy. Nei Guan acupressure is performed for two days and given three times a day, 30 minutes before chemotherapy, before breakfast and before dinner. Five raters (research assistants) who were previously trained, assisted in the

acupressure treatment and data collection.

The measuring instrument used in this study is the Pediatric Nausea Assessment Tools (PeNAT) made by L. Lee Dupuis, M.Sc., Phm., FCSHP. The researcher has received permission to use the instrument and change the language, so the researcher conducted a back translation, content validity and reliability test with the Interclass Correlation Coefficient (ICC) test to 5 raters using media hand out and video. The content validity test was carried out by two experts, namely child nursing and palliative care experts. The result of the test obtained a value of 0.75 after using the Gregory formula, so it indicated that the instrument had a high validity value. The reliability test was carried out on ten pediatric patients with cancer whose results were obtained with a kappa value of 0.866 which indicated that the degree of conformity among the five raters had high stability.

Measurement of nausea value was carried out three times, namely 1 hour after chemotherapy (P1), after waking up the second day (P2) and before going to bed the second day (P3). Measurement of vomiting interval in both groups was carried out on the first day of chemotherapy until the second day. After the respondent parents' submitted the informed consent, the researcher explained about recording the time of vomiting/nearly vomiting for two days. Vomiting intervals were recorded in the sheet provided by the researcher. Parents wrote down the time each child experienced vomiting or almost vomited.

The numerical comparative hypothesis test in pairs for the measurement of nausea values P1, P2 and P3 in each group used the Friedman test because measurements were performed more than twice and were not normally distributed. The numerical comparative hypothesis test between the control and intervention group in the nausea scale measurement P1, P2 and P3 used the Mann Whitney test because it was not normally distributed. The analysis was also used to determine the difference in mean of vomiting interval between the control and intervention group calculated in minutes. The measurement of an unpaired numerical comparative hypothesis test for the difference in vomiting interval used unpaired t-test because it was normally distributed.

Result

Table 1 Frequency Distribution Based on Characteristics of Respondents in Control and Intervention Group (n = 30) at Dr. Hasan Sadikin Hospital Bandung

Variable	Total	%	Group	
			Control (n=15	Intervention (n=15)
Sex				
Man	17	56.67	9 (60,0)	8 (53,3)
Woman	13	43.33	6 (40,0)	7 (46,7)
Age (years)				
6–8 years	19	63.34		
9–10 years	4	13.33		
11–12 years	7	23.33		
Average				
± SB			8 ± 3	8 ± 2
Range			6–12	6–12
Type of Cancer				
Systemic	11	36.67	4 (26,7)	7 (46,7)
Solid	19	63.33	11(73.3)	7 (46.7)
Experience of Vomiting				

Yes	25	83.33	11(73.3)	14(93.3)
No	5	16.67	4(26.7)	1(6.7)

Table 2 Nausea Value Differences on First (P1), Second (P2) and Third (P3) Measurement in Control Group

Control Group (n=15)	Nausea Value			p[a]-Value
	First Measurement (P1)	Second Measurement (P2)	Third Measurement (P3)	
Median	1,00	1,00	2,00	0,001*
Min.-max. Range	1,00 – 2,00	1,00 – 3,00	1,00 – 4,00	

** Analysis using the Friedman test, significant p≤ 0.05*

Table 3 Nausea Value Differences on First (P1), Second (P2) and Third (P3) Measurement in Intervention Group

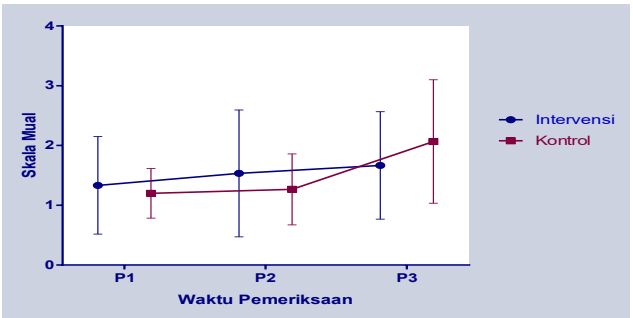
Intervention Group (n=15)	Nausea Value			p[a]-Value
	First Measurement (P1)	Second Measurement (P2)	Third Measurement (P3)	
Median	1.00	1.00	2.00	0.244
Min.-max. Range	1.00 – 4.00	1.00 – 4.00	1.00 – 4.00	

Note: Analysis using the Friedman test, significant p≤ 0.05

Table 4 Nausea Value Differences among P1, P2, and P3 in Control and Intervention Group

Measurement	Control Group (n=15)		Intervention Group (n=15)		p-Value
	Median	Min-Max	Median	Min-Max	
First (P1)	1.00	1.00–2.00	1.00	1.00–4.00	0.967
Second (P2)	1.00	1.00–3.00	1.00	1.00–4.00	0.713
Third (P3)	2.00	1.00–4.00	1.00	1.00–4.00	0.305

Note: Analysis using the Mann Whitney test, significant p≤ 0.05



Graph 1 Differences in mean values of nausea in the control and intervention group

Table 5 Differences in Vomiting Intervals between Control and Intervention Group

Vomiting Interval (Minute)	Group		p-Value
	Control n=11	Intervention n=9	
Median ± SD	289,4 ± 148,4	313,6±187,0	0,751
Range	82,5 – 513,3	84,6 – 724,5	

Note: Analysis using an unpaired t-test, significant p≤ 0.05

The characteristics of the respondents indicated sex was dominated by male (56.67%). The highest age in the two groups was 6–8 years on average (63.34%) (Table 1). Most cancers were solid tumors (63.33%) with the most diagnosed disease, Rhabdomyosarcoma. Most respondents in both groups had previous experiences of nausea and vomiting (83.33%).

The mean of nausea value in the first measurement and the second measurement had the same value (median = 1). The mean value of nausea in the third measurement tended to increase (median = 2). Results of the Friedman test obtained a p-value of 0.001 (p-value ≤0.05) so it can be inferred that in the control group there was a significant difference in the mean value of nausea between P1, P2, and P3 (Table 2).

There was no difference in the mean value of nausea for the three measurements because they had the same value (Median = 1.00). Statistical tests using the Friedman test obtained a p-value of 0.244 (p value> 0.05), so the result showed that in the intervention group there was no significant difference in the mean of nausea value between P1, P2, and P3 in the intervention group (Table 3).

Statistical test results on measurements between the control and intervention group using the Mann Whitney test showed that the first measurement (P1) was 0.967, the second measurement (P2) was 0.713, and the third measurement (P3) was 0.305. The three measurements showed that there were no significant differences marked with a p-value > 0.05 (Table 4).

Furthermore, there was a tendency of rising nausea values in the control group compared to the intervention group (Graph 1). The study results explained it as clinically significant, but statistically insignificant (Dahlan, 2010).

Also, the mean vomiting interval showed that the vomiting interval in the control group was faster (289.4 minutes) compared to the intervention group (313.6 minutes). The results of unpaired t-test showed that the use of acupressure affected vomiting/ almost vomiting after chemotherapy even though it was not statistically significant (p-value> 0.05) (Table 5).

Discussion

Nausea and vomiting are side effects of chemotherapy which are most often felt by pediatric cancer patients. The response of vomiting to chemotherapy can occur after the vomiting center receives chemical stimulation from the emetogenic level. The acute phase of nausea vomiting occurs when chemotherapy and radiation drugs cause serotonin release from enterochromaffin cells in the intestine. Increased serotonin receptors or 5-Hydroxytryptamine type 3 (5HT3) in the central nervous system area, especially in the CTZ area, will cause nausea and vomiting. Vomiting occurs when the CTZ stimulates the vomiting center, and efferent impulses are sent through cranial nerves V, VII, IX, X, XII and spinal nerves to the central area of salivation, abdominal muscles, respiratory center, and nerve center (Rhodes & Mc Daniels, 2001).

Some of the effects of nausea complained by several study subjects were reduced appetite and sleep disorders. Decreased appetite can lead to a risk of nutritional deficiencies. Owen, Hanson, Mc Arthur and Mikhailov (2013) explain, approximately 46% of children and adolescents with cancer are malnourished or at risk of malnutrition. Many of those who lose appetite do not even want to eat at all. Hence, it is often found that hospital food is still left or not touched at all. Besides a decreasing appetite is the impact of chemotherapy side effects, it can also be due to the type of food that is not generally served

like at home, while school-age children need adequate nutritional intake in increasing growth and development according to their age level.

Rahmayanti and Agustin (2015) explain school-age children with cancer who get chemotherapy have poor sleep quality. Nausea can cause sleep disorders which causes discomfort. Discomfort due to nausea from chemotherapy effects can decrease the quality of life of children with cancer as nausea causes fatigue (Sefrina, Nurhaeni, & Hayati, 2014). Fatigue can interfere with the developing tasks of school children whether playing or studying.

Several study subjects felt nauseous complaints a few hours after undergoing highly emetogenic chemotherapy. This is in line with several studies explaining that the peak of nausea and vomiting can occur after 1–2 hours after chemotherapy, but other studies reveal that the height of acute vomiting will reach a maximum of 5–6 hours in the first 24 hours after administration of chemotherapy (Enikmawati, 2016; Rithirangsriroj et al., 2014).

The administration of antiemetic drugs before chemotherapy aims to prevent nausea and vomiting as a result of the highly emetogenic level. Gilmore et al. (2013) explain that without prophylactic antiemetic drugs, the incidence of chemotherapy vomiting is between 30% and <90% in chemotherapy drugs with moderate and high emetogenic levels, so administration of antiemetics should be before chemotherapy. Prevention of nausea and vomiting with antiemetic administration will successfully control nausea and vomiting in the acute phase, namely 0–24 hours after the chemotherapy administration.

The administration of antiemetic therapy in both groups was in the form of ondansetron via intravenous. Ondansetron is one of the types of antiemetic which is antagonistic for serotonin receptors. Katzung, Master, and Trevor (2013) describe serotonin receptor antagonists as potent antiemetics with the mechanism of action of blocking serotonin receptors in the vomiting center and Chemoreceptor Trigger Zone mainly through peripheral serotonin receptor blockade in spinal afferent nerves.

The statistical test results between the two groups showed that the test results were not significant but from the mean values between groups explained that acupressure had the effect of suppressing chemotherapy-related nausea. The results of the mean nausea value showed that the control group tended to increase the mean value of nausea, while the intervention group did not experience an increase (Graph 1).

Acupressure is one of the adjuvant therapies by applying pressure to the skin on the acupoints. The pathological state of nausea and vomiting can occur due to a chronic disease which causes weakness in the stomach (Wei). Applying acupressure can accelerate the circulation of energy (Qi) and blood (Xue) through the flow of meridian lines (Jing Luo), after performing massage stimulations to the appropriate points (Jie, 2008). The acupoint for nausea and vomiting is the Nei Guan point. This point will stimulate the release of alpha beta (αβ) and alpha (α) fibers through sensory receptors. These fibers will interact with the central nervous system which results in endorphogenic cells removing endorphins from the hypothalamus. The increased levels of endorphins in the blood and cerebrospinal fluid will cause a sense of comfort and decrease the impulse of nausea and vomiting in the area of Chemoreceptor Trigger Zone (CTZ) and vomiting center (Dastgir, 1988; Syarif et al., 2011).

Nausea and vomiting felt by people with cancer who get chemotherapy are acute and slow nausea and vomiting. Syarif et al. (2011) explain that patients who receive chemotherapy will experience mild nausea and vomiting on the first day and will increase on the second day. This study contrasted with the explanation because the intervention group which received acupressure in this study did not increase the mean value of nausea on the second day. This result is in line with the study result by Eunice (2012), explaining that the effect of Nei Guan acupressure is noticeable on the second day to the fifth day.

The administration of acupressure and antiemetics has a similar goal, which is to provide comfort by decreasing the value of nausea and vomiting. The mechanism

of decreasing nausea and vomiting in both is different; acupressure is by increasing endorphins and antiemetics by blocking serotonin receptors. The effect of acupressure administration was illustrated in the intervention group with the value of nausea in the first to third measurements did not increase, and the vomiting interval was longer. This showed that the administration of adjuvant therapy along with pharmacological treatment was more influential in decreasing the value of nausea compared to merely pharmacological administration. The inference was that giving acupressure affected suppressing nausea and vomiting due to chemotherapy.

Conclusion

Based on the study results, the majority is male respondents; they have a solid tumor type, and previous nausea and vomiting experiences. Also, the study results show that the control group tends to increase in the mean of nausea and vomiting, and vomiting intervals are faster. The conclusion is, the effect of applying acupressure to emetogenic chemotherapy-induced nausea and vomiting in school-age children with cancer is clinically significant, even though statistically not significant.

There are limitations in this study, namely taking too many raters can affect the depth of acupressure suppression, and the intervention was carried out for two days to obtain data on the trend of nausea due to the administration of highly emetogenic chemotherapy and applying pressure on other acupressure points given singly or combined.

For health services: it expects that the study results may be input for the hospital as a service standard in handling chemotherapy-induced nausea and vomiting, and coordinating with the health promotion section to facilitate the creation of leaflets and videos on Nei Guan acupressure. Giving acupressure can be considered as an option for nurses and patient's parents as adjuvant therapy which is carried out simultaneously with the provision of pharmacological treatment.

For researchers: it expects that the study results can be used as input to carry out further research related to the use of acupressure to reduce chemotherapy-induced nausea and vomiting by considering the homogeneity of cancer types, other age of children, and cycle of chemotherapy. Besides Nei Guan point, further research can be carried out to other points, both singly and in combination.

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Food and Activities Taboos among Sundanese Pregnant Women

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Abstract

Taboos are found everywhere including Indonesia. There are different types of taboos in Indonesia especially during pregnancy. This study aimed to identify the practice of taboos related to food and activities among Sundanese pregnant women in West Java, a province with the largest population. A cross-sectional study was conducted with 312 pregnant women, who come to antenatal care at maternal and child health clinics of hospital, health care center and private midwifery clinics at four districts area in West Java province (Cianjur, Bandung, Sumedang and Garut) from October–December 2014. The data were selected purposively used the questionnaires included important demographic characteristics and questions regarding food and activities taboos during pregnancy. SPSS Win.12.0 were used for data analysis. The practice of food and activities taboo among pregnant women showed were about 29.4% very often, 42.1% often, 22.4% rarely, and 6.1% never in avoid to eat certain foods and to do particular activities during pregnancy. No statistically significant association was found between food and activities taboo during pregnancy and data demographics of respondents ($p>.05$). Still often done by pregnant women in avoid to eat certain foods and restriction to do particular activities. To assess the true picture we need to conduct larger studies in the community with interview method. These findings would be an important information for nurses in developing health education in maternal periods, and considering women's culture and beliefs in nursing care plan.

Keywords: Activities, foods, taboos, pregnant women, west java.

Introduction

The traditional background sometimes influences of the woman's behavior during pregnancy. Maintaining a healthy pregnancy is very important to the general health of the pregnant mother and her fetus. According to World health organization (2016), Indonesia is one of the country has the biggest maternal mortality ratio (MMR) in South East Asia and the larger number of mortality contribution. The most frequently of the causes of maternal (pregnancy-related) deaths still dominate by haemorrhage 30.3%, hypertension 27.1%, and 7.3% infection (Soedarmono, 2017). There are several factors that explain why maternal mortality is still high, it can be attributed to antenatal care, nutritional status of pregnant women, success rates of maternal and infant health services, family planning programs, environmental conditions, and socio-economic conditions (WHO, 2016).

The ignorance about nutritional needs and do any activities during pregnancy worsens the outcomes of pregnancy. Commonly, maternal mortality are often rationalized through assumption that mother may have done wrong during pregnancy such as unattended prenatal care or belief in certain activity (eg, taboos).

In order to get wellness throughout the pregnancy and into early parenthood, pregnant woman and her family should have a proper planning and preparation for the pregnancy. Unfortunately, in Indonesia, it's a common phenomenon that pregnancies happen expectantly. Many married women did not want to be pregnant after having two or three children, but they were not using contraceptives, or they were using methods with relatively high failure rates.

In exploring the food and activities taboos during pregnancy, for example Ali (2004) found that pregnant mothers believing if their restricting all foods during the first 6 months that would be easy to labor a small baby. Similarly, there is considerable evidence of women's beliefs and practices regarding food restriction during pregnancy and lactation in Korea, that women self-food restriction as Asian women are advised to avoid cold foods because they are not good for the mother and baby. Thus, this self-restriction eating certain food differs from because food unavailable or poverty. However, the cultural tradition also effects as a cause of dietary behavior. Even though, without a scientific basis, popular myths about the mother's diet during pregnancy and breastfeeding can become barriers to maternal health and lead to unnecessary dietary restrictions in pregnancy (Goun, 2017).

Pregnancy and childbirth have universally been accepted as a natural means of continuing human's life, although in Indonesia, the cultural variation in beliefs about pregnancy and childbirth are considered more important and also the specific social aspects by many ethnic groups. Therefore, many beliefs and practices relating to childbearing process must be observed by the woman and her family to ensure the health and well-being of herself and her newborn baby (Liamputtong Rice, 2000).

Considering the importance of daily activities including meeting nutritional needs and carrying out appropriate activities during pregnancy and the direct impact of pregnancy outcomes, this study will identify pregnant women who practice food and activities according to general characteristics.

Method

A cross-sectional study was conducted with 300 pregnant women who attended to antenatal care at maternal and child health clinics of hospital, health care center (Puskesmas) and private midwifery clinics at four districts area in West Java province (Cianjur, Bandung, Sumedang and Garut) from October–December 2014. A minimum sample of 300 pregnant women was required using 5 percent level of significance, a bound error of 5% and an anticipated prevalence of 50 percent. The researcher had discuss with the head of maternal and child health clinic, and division of education hospital to explain the purpose of study, procedure and conduction of the data collection and how to respond any questions. This study was conducted in accordance and approval of the nursing faculty of Universitas Padjadjaran. The permission obtained from the directors of those hospitals and facilitate to processing

data collection. A cover letter form give to the participants explained about the purpose of the study and instructions how to complete the questionnaire. The form asks for decision to participants if they would to participate in this research or not. In addition, this cover letter specified that the participant is completely voluntary with no risk or benefits. Confidentially were maintained by the list of names or any identifying personal information on questionnaires. These questionnaires kept for five years

The questionnaires included important demographic characteristics and questionnaires related with food and activities taboos during pregnancy. Hypothesize measurement models based on the questionnaires were tested through confirmatory factor analysis (number of cases =30). Using correlation technique score items with total score through coefficient correlation product-moment was computed and alpha Cronbach's. Internal Consistency Reliability was estimated using Cronbach's coefficient alpha. The validity and reliability coefficients for the subscale of taboos instruments was Cronbach's α =.86

Appropriate statistical analyses were performed with the software SPSS 1Win. 12.0 For Windows. Frequencies and percentages were calculated for demographic profile like women ages, gestational age, have been pregnant, education background, occupation, and monthly family income. Mean and standard deviation are reported for analysis result questionnaires. Statistical analysis included summation of scores of each participant (n=300) and measures of variability (range, mean and standard deviation). Furthermore, this study are for expanded of statistical analysis and it used by t-tests. The level of statistical significant was set on .05 to see if there was a significant finding between practical of food and activities taboos across to demographic data.

Result

Table 1 Distribution Frequency of Demography Characteristics of the Pregnant Women

Characteristic	Category	F	%
Age	Less than 20	30	10
	20–29	169	56
	30–39	77	26
	40 or greater	24	8
Gestational Age	Trimester I	59	20
	Trimester II	102	34
	Trimester III	139	46
Parity	Primi gravida	128	43
	Multigravida	142	47
	Grande multigravida	30	10
Education	Low education	242	81
	Middle education	31	10
	Higher education	27	9
Employment Status	Employed	79	26
	Not employed	221	74
Monthly Family Income	Less than IDR 1,000,000	141	47
	IDR 1,000,000 to IDR 2,000,000	101	34
	IDR 2,000,000 or more	58	19

Table 2 Percentage Distribution of Various Food and Activities Taboos during Pregnancy by Frequency Level

Question Items	Very Often n (%)	Often n (%)	Rarely n (%)	Never n (%)	M ± SD
Avoid too much sleeping	8(12.7)	127(42.3)	115(38.3)	20(6.7)	2.61± .79
Avoid eating a fatty food	64(21.3)	131(47.3)	93(31.0)	12(4.0)	2.82± .81
Avoid eating seafood like eel, shrimp, octopus, crab, squid, ray fish, other fish	10(3.3)	111(37.0)	125(42)	54(18.0)	2.26±.79
Husband avoid to kill the animal	85(28.3)	144(48.0)	68(22.7)	3(1.0)	3.04±.74
Avoid to see the wild and frighten animal	45(15.0)	134(44.7)	85(28.3)	36(12.0)	2.63±.88
Avoid to hate someone	197(65.7)	79(26.3)	16(5.3)	8(2.7)	3.55±.72
Avoid to rude behave to others	208(69.3)	71(23.7)	13(4.3)	8(2.7)	3.60±.70
Avoid to going out in the evening	97(32.3)	161(53.7)	32(10.7)	10(3.3)	3.15±.74
Avoid to watching criminal's television program	58(19.3)	174(58.0)	64(21.3)	4(1.3)	2.95±.68
Avoid to hearing the bad news	88(29.3)	185(62.0)	27(9.0)	0	3.20±.59
Restriction to eat some kind of fruits and vegetable like pineapple, avocado, pomegranate, guava, orange squash, durian, jack-fruit, papayas, sugar cane, and eggplant	55(18.3)	55(18.3)	113(37.7)	77(25.7)	2.29±.04
Avoid to see a moon eclipse	251(83.7)	48(16.0)	1(0.3)	0	3.83±.38
Avoid to drink a cold water	61(20.3)	145(48.3)	78(26.0)	16(5.3)	2.84±.81
Avoid to eat in big plate during pregnancy	61(20.3)	145(48.3)	78(26.0)	16(5.3)	2.84±.81
Avoid to cut hair	61(20.3)	145(48.3)	78(26.0)	16(5.3)	2.84±.81
Avoid to fishing	61(20.3)	145(48.3)	78(26.0)	16(5.3)	2.84±.81
Avoid to preparing the baby's needs during pregnant	61(20.3)	145(48.3)	78(26.0)	16(5.3)	2.84±.81
Total	88(29.4)	126(42.1)	67(22.4)	18(6.1)	2.95±.33

Table 3 The Correlation between Demographic Characteristics Data and Taboos

Demographic Data	Food taboos		Activities taboos		Total Score	
	Mean±SD	F or t (p)	Mean±SD	F or t (p)	Mean±SD	F or t (p)
Age						
<20	2.90±.41	5.15(.12)	2.58±.35	2 .67(.05)	2.91±.41	.16(.93)
20–29	3.20±.50		2.77±.40		2.96±.32	
30–39	3.06±.49		2.69±.39		2.94±.33	
>40	3.33±.48		2.82±.41		2.95±.34	
Gestational Age						
Trimester I	3.29±.46	3.00(.06)	2.85±.41	3.41(.06)	2.96±.37	.18(.83)
Trimester II	3.13±.53		2.67±.40		2.96±.30	
Trimester III	3.10±.48		.72±.39		2.94±.33	
Parity						

Primigravida	3.15±.49	03(.97)	2.71±.42	.26(.77)	2.95±.36	.49(.61)
Multigravida	3.14±.51		2.74±.38		2.94±.29	
Grande multigravida	3.16±.48		2.76±.41		3.00±.35	
Education background						
Low education	3.19±.49	1.45(.23)	2.77±.42	1.83(.12)	2.94±.34	1.75(.14)
Middle education	3.03±.51		2.60±.38		2.86±.31	
Higher education	3.05±.48		2.70±.41		3.08±.27	
Employment status						
Employment	3.13±.49	.35(.55)	2.73±.38	2.76(.39)	2.95±.32	0.34(.56)
Not employment	.16±.50		2.73±.41		2.95±.33	
Monthly family income						
< IDR 1,000,000	3.22±.48	2 .97(.05)	2.79±.41	3.02(.05)	2.93±.35	.35(.71)
IDR 1,000,000–2,000,000	3.12±.52		2.71±.40		2.96±.32	
> IDR 2,000,000	3.03±.49		2.64±.37		2.97±.29	

This research findings divide into demographics characteristic data, practically of food and taboos activities and correlation between demographics data with food and activities taboos. The demographic profiles of the samples are presented in Table 1. Pregnant women in all of period of pregnancies whose came to obstetric clinic without high-risk condition. All the participants dominated by maternal age 20 and 29 years (56.3%). The gestational age in trimester III (46%) which week's gestation was set based on the subjects self-report of their due date and the medical record. Most of women in multigravida (43%), and (80.7%) of participants were low-education category, which they education level were elementary school and junior secondary school. Also the pregnant women mostly as a housewife (73.7%) and their monthly incomes about IDR 1,000,000 ($100 USD) or less.

The table 2 showed about practically of food and activities taboos among pregnant women during pregnancy. The higher responses from participants answered is "often" (42.1%). Which the highest mean for question "avoid to seeing a moon eclipse" (3.83±.38), it is describes that some pregnant women forbidden to see moon eclipse (83.7%). The higher mean in taboos activity was (3.60±.70) for a question "avoid to rude behave to others", indicating that some of pregnant women (69.3%) keep away from unpleasant behavior during pregnancy. Other responses very often frequently by women pregnant was "avoid to hate someone" (65.7%) with mean (3.55±.72). Furthermore the others higher mean score findings according to taboos activity for questions: "avoid to hear the bad news during pregnancy" (3.20±.59), "avoid going out in the evening" (3.15±.74), and question for "husband avoid to kill the animal" (3.04±.74), and the lowest score is the question by "avoid to eat some seafood like eel, shrimp, octopus, crab, squid, ray fish, other fish" (2.26±.79). Other responses from participant as food taboos was "restriction to eat some kind of fruits and vegetable like pineapple, avocado,

pomegranate, guava, orange squash, durian, jack-fruit, papayas, sugar cane, and eggplant" (2.29±.04), although most participant answered in "rarely" (37.7%).

Discussion

Our study show a high percentage of respondents' taboos in belief to avoid some activities during pregnancy. If we compare all activities of Sundanese pregnant women, they are prefer to do a good things than negative activities, such as avoid to kill the animal, avoid to rude behave to others, and avoid to hearing the bad news. Although there are some activities that are avoided by pregnant women which have nothing relevance with a good or bad behave, including avoid too much sleeping, avoid to see the wild and frighten animal, avoid to going out in the evening, avoid to watching criminal's television program, avoid to see a moon eclipse, avoid to cut hair, avoid to fishing, and avoid to preparing the baby's needs during pregnant.

The reason for these high numbers could be, because the respondents were more health conscious and belief that activities during pregnancy have contribution to their pregnancy outcomes. Drawing from this result that the majority of women avoid eating certain foods such as sea foods, fruits and vegetables. The most common reason women said the reason for avoiding eating certain fruits or vegetables is fear of having an abortion. Other reasons avoiding for such activities related to the taboos' during pregnancy had about labor curse. Many mothers are told to avoid eating in a big plate because it thought to cause large placenta and labor obstruction. Similarly, there is considerable evidence of women's beliefs and practices regarding food restriction during pregnancy and lactation in Pakistan, reported that pregnant mothers believing if their restricting all foods during the first 6 months that would be easy to labour a small baby (Ali 2004). Also, the study from Schlenker (2015) identified a number of factors that are likely to influence personal perception of foods. How people perceive themselves in relation to food and food patterns plays a role in their attitudes toward food and personal eating behaviour.

This study in line with previous studies in Bangladesh showed that, most of the pregnant mother had a tendency of not to eat certain foods such as meat, they believed that it would lead to the birth of a large baby, which would hamper the smooth delivery and they have beliefs if they eat 'duck meat' might cause of asthma, cold and cough, allergy, pressure, digestion problem and afraid the baby will be voice like a duck. Also 'goat meat' might cause asthma, hot temper of child, bad smell of child's body and diabetes (Bhuiyan, 1988). Our study also showed that pregnant women avoid to eat seafood like eel, shrimp, octopus, crab, squid, ray fish, and others fish, even though they do not give any reason. However, this finding supported by study from Bhuiyan (2001) in Bangladesh and India, which they study found that women do not eat fish during pregnancy, because they beliefs eat a kind of fish could be increased movement of fetus and may cause child's Hysteria. Other reason explain by the women that "Boal fish" may cause big mouth, cold and cough disease of child. Whereas a study in India also have misbelieves about fish, their pregnant mother thinks that fish is 'hot food' and it might increase the temperature of their child. Regarding superstition about some fruits and vegetables, previous study in Bangladesh showed that, fruits like pineapple might cause miscarriage (Valenski, 2017). The study in Nigeria, also showed that most of the women believes that pineapple might cause abortion; child's skin might have eye spot like pineapple. Some women believes that black berry may cause black skin like black berry, others believe that, if they drink coconut water, their child's eyes might be white. There have also some misbelieves about tea, coffee, particularly at in local government area, in Nwangele showed that, tea, coffee might causes excessive bleeding during labor and delivery (Maduforo, 2016). Not only in Indonesia, Nigeria, and Bangladesh but also other country have the nutritional beliefs or taboos among the pregnant women. According to study in Pakistan about nutritional beliefs and practices among diabetic pregnant mothers, the finding showed that women said tea and coffee might cause child's dark skin. While,

most of their pregnant women did not eat cauliflower, turnip and potato, as they thought that it might cause loose motion of the child. Besides, in India it was showed that their pregnant mothers did not eat milk, egg, fish, meat, onion, garlic etc. "hot food" as they think it might increase the temperature of the child (Salma, 2017).

The develops ways of eating based on ethnic or cultural background, religious beliefs, family habits, socio economic status, health status, geographic location, and personal likes and dislikes. However, the growing ethnic and cultural diversity has been acculturated individual to view food, and think about particular food is safe or unsafe to eat, good or bad will usually have a pronounced effect on that's food's acceptability to them.

Therefore, the respect of taboos is one of the things common to all humans. Taboos are found everywhere, and are always aimed at preventing some form of perceived danger or misfortune. However, various types of taboos in some countries are clear to describe the majority of pregnant women still have a big misunderstanding during pregnancy that affects their practice.

Conclusion

The findings from this study supported the practically maternal health care activity at four districts of West Java province, Indonesia have strongly influenced by taboos behavior including taboos activity and taboos food than encouraging behaviors. According to the result of this study, most of beliefs of pregnant women during pregnancy taboos activities potential give a high influence to pregnancy outcomes, particularly in restriction consume a certain foods. Our main concerning issues is that we feel these dietary restrictions leads to pregnancy complication such as anemia, malnutrition and low birth weight. Which the nutritional factors play an important role in pregnancy periods to ensure optimal birth outcomes, maternal health and determine the quality of human resources in future. Through taboos behavior, health promotion about maternal health care can accommodate with information dissemination among pregnant women.

Currently other cultural practice, pattern experiences, behaviors, opinions, beliefs, feelings, and knowledge of a community still need to be explored. Therefore, we recommend further larger studies should be conducted in the community setting in this regard to know more about the factors influence to their cultural beliefs. These studies added to nursing's knowledge based, and encourage client education. Through taboos behavior, nurse providers must provide health education for pregnant women on practically maternal health care activity.

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The Experience of Symptom Cluster and Symptom Alleviation Self-Care in Patients with Head and Neck Cancer: A Qualitative Study

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Abstract

Patients with head and neck cancer usually experience physical and psychological changes and adjustments related to the disease and management of therapy. The patients will experience symptom cluster and will use effective symptom alleviation self-care to relieve the symptoms. The proper identification of symptom cluster and the effectiveness of using symptom alleviation self-care will be the basis for the success of disease management. This study aimed to investigate the symptom cluster and symptom alleviation self-care in patients with head and neck cancer, and which has an impact on the quality of life. This research was a pilot study using a qualitative design and involved five patients at the public hospital in Semarang, Indonesia. The qualitative design has been chosen to explore the varied of symptom experienced by the patients about the nature, number, location, duration and intensity of experiences, which may different experiences of symptom cluster and symptom alleviation self-care for each patient with Head and Neck Cancer. Data were collected through semi-structured interviews and analyzed used the qualitative content analysis process. Three themes were identified in this study, including: the patients' experience of symptom cluster, the patients' experience of symptom alleviation self-care, and the impaired quality of life domain. The results of this study showed that the patients' experience sickness and gastrointestinal symptom cluster during illness and undergoing therapy, as well as variations in the symptom alleviation self-care, including: diet/ nutrition/ lifestyle changes, mind/ body/ spiritual control, biological treatment, herbal treatment, and prescribed medicine. The symptom cluster and symptom alleviation self-care has an impact on the patients' outcome that is the quality of life. This study showed that the experience of symptom cluster and symptom alleviation self-care varied and highly individualized, which has an impact on the quality of life. The importance of proper identification about symptom cluster and the effectiveness of using symptom alleviation self-care by the nurses will be the basis for the success of disease management to improve the patients' quality of life. Therefore, optimizing the nurses' role is needed as the basis for the development of symptom management nursing programs.

Keywords: Head and neck cancer, symptom alleviation self-care, symptom cluster, quality of life.

Introduction

Head and neck cancer included in the top six incidences of cancer in the world (Jemal et al., 2011). This disease can cause death and suffering caused by experiences of physical and psychological changes and adjustments related to the disease and management of therapy (Cheng & Lee, 2011; Caldeira, Carvalho, & Vieira, 2014). During this time, patients experience many individual symptoms associated with physical and psychological changes. The physical changes experienced by head and neck cancer patients include pain, fatigue, drowsiness, nausea, vomiting, sleep disturbance, lack of appetite, and other symptoms (Cheng & Lee, 2011). Psychological changes due to depression, anxiety, and distress can also occur (Haisfield-Wolfe, McGuire, & Krumm, 2012). Sometimes, multiple symptoms will appear simultaneously.

The phenomenon associated with the emergence of symptom cluster needs to be investigated because cancer patients have multiple symptoms that can cause suffering (Marylin J. Dodd, Miaskowski, & Lee, 2004). Some studies support this statement (Barsevick, 2016; Kirkova, Aktas, Walsh, & Davis, 2011). Symptom cluster will affect outcomes, which will subsequently affect survival, ultimately decrease functional status over time, and decrease adherence to therapy, even death (M. Dodd & Faan, 2001; Kurniawati, Kuhuwael, & Punagi, 2013). Furthermore, symptoms in symptom cluster experienced by patients are subjective phenomena that must be assessed by patients who report or experience them. An example is research on nausea which states that the nature, number, location, duration and intensity of experiences described as nausea varied. Some patients identified symptoms as part of the experience of nausea, and others described symptoms associated with nausea but separate from it (Olver & Eliott & Koczwara, 2014). Therefore, a qualitative study is needed when they report nausea or other symptoms, which are designed to explore the possibility that patients use the term to to describe a cluster of symptoms, rather than just regarding them as separate associated symptoms. Nevertheless, the symptom cluster related investigation deals not only with how the symptom cluster is formed, but also the symptom management strategies used.

Self-care management is one of the useful strategies to control and manage symptoms complained by patents. S (M.J. Dodd, Miaskowski, & Paul, 2001; Richard & Shea, 2011; Temtap & Nilmanat, 2011). The use of self care methods to treat symptoms is commonly called symptom alleviation self care. Several studies have suggested that cancer patients perform various symptom alleviation self cares to relieve and manage multiple symptoms (Williams et al., 2010; Williams, Lantican, Bader, & Lerma, 2014). Therefore, an effective self care method is required as a condition in the symptom management. With data of an effective self care strategy, patients' quality of life may increase (M.J. Dodd et al., 2001).

Based on the research background, the head and neck cancer patients' experiences of symptom cluster and symptom alleviation self care and the impact on the quality of life need to be explored. This research could become a basis for improvement of symptoms and disease management so that the distress can be reduced and the occurrence of the symptoms can be prevented.

Method

The study used qualitative method. The participants consisted of 5 head and neck cancer patients at the public hospital in Semarang, Indonesia. The inclusion criteria are adult patients aged 18–70 years old, able to communicate well and cooperatively, have been diagnosed as having head and neck cancer without metastasis to the brain that proven by diagnostic tests and signs of accompanying symptoms, and not experiencing mental disorders.

Data collection was done using semi-structured interviews. An interview guide with 3 open-ended questions was prepared by the researcher. The question of the interview guide about the patients' experience of symptom cluster, the patients' experience of symptom alleviation self care, and the impaired quality of life domain. The

questions focus on how the patients perceive symptoms and how to manage symptoms called symptom alleviation self care.

Total of 5 cancer patients being semi-structured interviews about symptom cluster. Interview results were analyzed using content analysis. It consists of transcribing (making transcripts of the patients' conversations), determining the meaning unit for searching relationships between words, sentences or paragraphs and finally, abstracting data to form several themes (Elo & Kyngäs, 2008).

Result

Participants who participated in this study were 5 patients with head and neck cancer; 2 patients were male and 3 patients were female. The participants' age ranges from 40 to 60 years. Three themes were identified in the study. The themes indicate the interrelations and describe the symptom cluster and symptom alleviation self care among head and neck cancer patients. The study conducted by Kim mentions that a symptom cluster is a stable group of two or more concurrent symptoms and is related to each other and independent of other symptom clusters (M.J. Dodd et al., 2001; Kim, McGuire, Tulman, & Barsevick, 2005). The explanation of each of the themes is as follows:

Theme 1: The patients' experience of symptom cluster

The patients mentioned that they experienced sickness and gastrointestinal symptom cluster. They exprienced multiple symptoms simultaneously, which are independent of symptoms or other symptom groups.

Subtheme 1: Sickness symptom cluster

Sickness symptom cluster is a physical disorder caused by disease and therapy management. This symptom consists of a collection of symptoms of pain, fatigue, sleep disturbance and decreased appetite. The following statements describes the occurrence of cluster symptoms because of cancer experienced by the participants:

"When I feel tired or too much activity, the cancer will be painful. When the pain appears, I will not be able to sleep. So, my activities must be reduced and I must take some rest. "(P 1)

"The pain that I feel heavy in the area of cancer. it is so painful, every day I cried. The medicine from the doctor is not very helpful, I cannot sleep. Sometimes I sleep only in a chair and very short "(P 2)

In addition, sickness symptom cluster can also occur due to chemotherapy process. One of the participants stated:

"Ever since I had this chemotherapy, I felt a growing pain in the area of cancer and the whole body. Therefore, I finally decreased my appetite, I just spent ¼ portion than usual, and I substitute with lontong (rice cake). Since I have decreased my appetite, I also feel tired and weak when doing daily activities. That may be due to reduced food intake "(P 3)

Subtheme 2: Gastrointestinal symptom cluster

This cluster symptom consists of a groups of symptoms of nausea and vomiting. It can be caused by chemotherapy. The following statement is related to this:

"After chemotherapy I experienced nausea and wanted to vomit. For 2 weeks, I felt the effects of chemotherapy, every day I feel both. I still feel nauseated even though I have taken medicine from the doctor and sometimes vomited "(P 3)

Theme 2: The patients' experience of symptom alleviation self care

Symptom alleviation self care is done to overcome the patients' symptoms. The symptom alleviation self care performed by the 5 participants varied, including 5 complementary therapy, as follows:

Subtheme 1: Diet/ nutrition/ lifestyle changes

A total of 4 participants used diet/ nutrition/ lifestyle changes as a self care method to solve the symptoms. This method was done by avoiding sweet foods, animal protein, and fried foods, eating fruits and vegetables, replacing white rice with brown rice, eating little but often, eating ice cream, avoiding scent/ smell.

"What is my taste or what I want then will eat and I drink, so it can overcome the nausea.

For example I want to eat ice cream then I will eat it, sometimes I also avoid the smell that can make me nauseous. "(P 1)

"When I feel nauseated, I will stop eating and when I do not feel vomit, then I start to eat again, spend a portion of it long. Then, for example I am not appetizing rice then I will replace with other foods, such as eating fruit or before eating I drink juice first, eat other foods so my stomach is not empty. "(P 2)

"I eat brown rice and vegetables to reduce nausea and vomiting. I keep my food for example, avoiding sweet foods, animal protein, and fried foods. I replace it by drinking fruit juice every day, but using fruit that is not sweet too. "(P 5)

Subtheme 2: Mind/ body/ spiritual control
Symptom alleviation self care was done by praying, distraction, activity. Two participants performed this method to treat nausea, pain, and other symptoms that appeared. This was expressed by the participants, as follows:
"Our minds are also transferred to others to cope with nausea. We also created activities to reduce the pain. "(P 1)

"In addition, I read the istiqfar to relieve the pain, read the prayer I do every time when the pain appears, so I do not feel it" (P 2)

Subtheme 3: Biological treatment (vitamin)
This method was done by taking vitamins. Symptom alleviation self care was done by 2 participants, as indicated by the following statement:
"I consumed vitamins, wine extract which is a sackly product to accelerate the growth of dead cells." (P 5)

Subtheme 4: Herbal treatment
A total of 4 participants used herbal treatment to solve the symptoms that appear. This method was done by consuming mangosteen peel, garlic, and Chinese herbs. This is supported by the following statement:
"I just take herbal medicine to overcome the nausea, mangosteen skin consumption that has been sold in the form of packing and biocipres, and the consumption of onion (bawang lanang) to boost immunity." (P 1)

"I bought Chinese herbs at Pharmacies to relieve my pain. Because I have taken medicine from a doctor but it cannot overcome it. "(P 2)

"I have a habit of chemotherapy, I bring dates, every time I feel nauseated I take one, so I do not vomit." (P 3)

"At first, I was told my friend to consume malikus leaves or his name is African leaf. When consuming it, the pain as sliced can disappear and stop, so the pain is not the terrace. "(P 5)

Subtheme 5: Treatment prescribed
Consuming oral medicine and using pacth from doctors were done by two participants to relieve pain. This is expressed in the following statement:
"I was given medicine by a doctor in the form of plastic outboard. The medicine was only used for 3 days only. Although the drug can not reduce pain too much but I can still sleep about 5 minutes compared to previous types of drugs given by doctors. "(Ps 2)

"I take pain medication from a doctor to reduce pain in the area of cancer." (P 5)

Theme 3: The impaired quality of life domain
All participants expressed that there was life quality decrease during illness. All patients experienced disturbance in the domain of functional scale, scale of symptoms (fatigue, pain), global QOL, and single item (financial difficulties). This is reflected by the following statements as follows:
"I have not been able to work to make a living, even just for my daily activities I still can not be maximized. This is because I still have to undergo routine checks to the hospital "(P 1)

"When I get sick and feel severe pain, my family forbids me to do daily activities. Food and drink had been prepared by my family and placed on the table above my bed. I feel the pain every day and it does not decrease. So, I can only cry even I cannot sleep and do other activities. "(P 2)

"I feel fear and anxiety, when the verdict suffered from cancer. I feel this life will end, until I do not want to do anything and just cry in my room. "(P 3)

"Now, when walking can not run quickly, should slowly because if the road is too fast I easily tired, tired and the body feels pain. I realize it is not as strong as it used to be. "(P 5)

Disccusion

In this study, the patient experienced many individual symptoms that form the symptom cluster, namely: the experience of sickness and gastrointestinal symptom cluster. The patients experienced two or more symptoms that occur together; they are interconnected and independent of other symptoms or groups of symptoms (M.J. Dodd et al., 2001; Kim, McGuire, Tulman, & Barsevick, 2005). Several studies have shown a correlation between two or more symptoms that make up the sickness of the cluster. These results are supported by two studies, indicating that head and neck cancer patients can experience sickness symptom cluster, consisting of a group of symptoms of pain, fatigue, sleep disturbance and decreased appetite (Chen & Lin, 2007; Kirkova et al., 2011). In addition to the sickness symptom of the cluster, the patients also experience nausea and vomiting, forming a gastrointestinal symptom cluster. Several studies have shown that these two symptoms are consistently present in the same clusters (Barsevick, 2016; Chen & Lin, 2007; Jiménez et al., 2011; Kirkova et al., 2011). It can be concluded that the experience of nausea included unique symptoms that occurred among cancer patients. It was identified that there were concurrent symptoms, which were considered separate but related to nausea, such as vomiting. And they called symptom cluster because they are a stable group of two or more concurrent symptoms and is related to each other and independent of other symptom clusters.

In addition, this study also explore the self care methods used by the patients. The patients used several variations of symptom alleviation self care to treat symptoms, such as: pain, fatigue, sleep disturbance, decreased appetite, nausea and vomiting. They can be classified into 5 categorical complementary therapies, including: diet/ nutrition/ lifestyle changes, mind/ body/ spiritual control, prescribed treatment, herbal treatment, and biological treatment (vitamins). Self care is a method that benefits cancer patients (Williams et al., 2010). Self care interventions will reduce the side effects of treatment and may affect adherence to treatment regimens, thereby enhancing quality of life (Williams et al., 2014).

Diet/ nutrition/ lifestyle changes and herbal treatments are mostly used by the participants in this study than other self care methods. Similar results were also obtained among cancer patients in the southwestern United States where diet/ nutrition/ lifestyle change had high numbers of self-care responses. Self-care methods used are reported over 90% can be helpful (Williams et al., 2014). The intervensions in this method, such as changing eating habits or food modifications, consuming vegetables and fruits, and using nutritional supplements. Another method of self care mostly used is herbal plants. This method has been used as a medicine since ancient times by all cultures. Herbal medicine is made from leaves, branches/ branches, roots, seeds, or even flowers. This medicine may consist of a single herb or combination of herbs, such as traditional Chinese herbs and Ayurvedic from India (Wesa, Gubili, & Cassileth, 2008). Several studies have revealed that herbal treatments are obtained from local herbs. Both methods of self care are used to overcome the pain, fatigue, sleep disorders, lack of appetite, depression, sadness, nausea, vomiting, and anxiety (Temtap & Nilmanat, 2011; Williams et al., 2010, 2014). The used of herbal plant can give the advantages to relieve the symptoms.

Two participants chose to use mind/ body/ spiritual control, biological treatments (vitamins), and prescribed medications. This method was chosen to relieve symptoms of pain, fatigue, sleep disturbances, lack of appetite, nausea, vomiting, and mood disorders (Temtap & Nilmanat, 2011; Williams et al., 2010, 2014). Body/ mind/ spiritual control methods are increasing in popularity and available as part of major medical care (Wesa

et al., 2008). The mind, body, and spiritual modality focus on the interaction between brain, mind, body, spiritual and behavior with the aim of reducing symptoms and improving health. Similar to this study, several other studies have indicated that praying, distraction, and other activities are effective (Temtap & Nilmanat, 2011; Williams et al., 2010, 2014). Mind-body-spiritual therapies are generally safe (Deng & Cassileth, 2013; Mujar et al., 2017; Pinzon-Perez & Pérez, 2016). Biological treatment is an option that patients also use as a self-care method. In this method, the biological treatment that patients often use is the use of vitamins (Christanti & Prasetyo, 2012). Some vitamins and minerals are essential for life and health. In just a few milligrams, the amount of each vitamin is needed by the human body. However, a small amount is very important for all body's biochemical processes. It is used to convert food into energy and to help the body produce hormones, blood cells, and nervous system chemicals (Cassileth, 2011). In addition, prescribed medicines by doctors are still used by patients. Medically determined treatment measures are incorporated into self care to help patients control the symptoms of pain, nausea/ vomiting, sleep disorders and anxiety in cancer patients (Temtap & Nilmanat, 2011; Williams et al., 2010, 2014).so what? In discussion you as author need to explain your opinion for future implication

This study also shows that head and neck cancer patients experience various life quality disorders in the form of weaknesses both physical, psychological, and social. This is supported by a study reporting that patients with nasopharyngeal cancer experienced all the disturbances on the 15 scale of quality of life, including: 5 functional scale, 3 symptoms scale, global QoL and six single items (Kurniawati et al., 2013). Other studies on head and neck cancer patients also showed results similar to previous studies (Leung et al., 2011).

The effects of disease and therapy on the patients' quality of life are illustrated in this study. Proper quality of life assessment will affect the patients' overall sustainability, adherence to therapy and even death (M. Dodd & Faan, 2001; Kurniawati et al., 2013). The assessment of quality of life also needs to pay attention to the use of symptom management strategies embodied with the symptom alleviation self care and the emergence of symptom experience (M. Dodd & Faan, 2001). Therefore, symptom management for head and neck cancer patients should focus on these three things. This can be an indicator of the successful action of health care providers and the patients' satisfaction to the achievement of their health.

Conclusion

The experiences of symptom cluster and symptom alleviation self care vary and are highly individualized, depending on how individuals respond to the disease and management therapy. The existence of the impact caused by the disease and the management therapy will affect the condition of the patients, that is the disruption of quality of life. The importance of proper identification of symptom cluster and the effectiveness of using symptom alleviation self-care by nurses will be the basis for the success of disease management to improve the patients' quality of life. Therefore, optimizing the role of nurses in the case of symptom cluster assessment, symptom alleviation self care, and quality of life monitoring is needed as a basis for the development of symptom management nursing programs.

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The Mental Burden of Parents of Children with Thalassemia

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Abstract

Thalassemia is an inherited blood disorder in which there is a chronic abnormality of red blood cells. When a child suffers from a severe illness, the family usually acts as caregivers, which put them at risk of experiencing a burden of care. This study aims to identify the level of charge perceived by parents caregivers of children with thalassemia. A quantitative approach was used in this research to obtain data by using a continuous sampling. The samples in this research consisted of 71 parents of children with thalassemia, who are either their biological father or mother who attended thalassemia center on August 30, 2017 - September 13, 2017. The instrument was used in this research was modified from a Caregiver Burden Scale instrument (developed by Elmstahl). The data obtained were analyzed using a descriptive statistical technique in which parents burden is categorized into three levels: mild, moderate, and severe levels of burden, and they are measured in percentage. The result showed that 36 respondents (50.7%) perceived a mild level of burden, 31 respondents (43.7%) perceived moderate level of burden, and four respondents (5.6%) saw the severe level of burden. This study concludes that most respondents perceived a mild and moderate level of burden, but in terms of responsibility, economy, expectation, and anxiety, they showed a severe degree of burden. Nurses are suggested to maintain or alleviate the burden by providing education, counseling, emotional support and adaptive coping mechanisms for parents of children with thalassemia.

Keywords: Burden, parents, thalassemia.

Introduction

Thalassemia is one of hereditary and the most common cronic diseases. Thalassemia is a heterogeneous group of the hemoglobin disorders in which the production of normal hemoglobin is partly or completely suppressed as a result of the defective synthesis of one or more globin chains the most common types of clinical importance being α, β, and δ thalassemia (Cappellini, Cohen, Eleftheriou, Piga, Porter, Taher, 2008)

Thalassemia incidence in Indonesia is relatively high, and the country is included in high-risk countries, 3,000 babies born to have thalassemia every year (Mulyani, 2011). Twenty percent of babies born in West Java carry the traits of thalassemia. Yayasan Thalassemia Indonesia-Perhimpunan Orangtua Penderita Thalassemia (YTI-POPTI) recorded 7,238 thalassemia major sufferers in 2016, and 3,200 (45%) of them were residents of West Java. West Java is the area with the largest number of thalassemia patients in Indonesia (Widiyatno, 2016).

Clinical symptoms of β thalassemia include anemia, jaundice, growth retardation, facial bone deformities, enlarged spleen, and susceptibility to infection (James, 2007). Besides, thalassemia might result in psychological and social disorders such as anxiety, depression and social withdrawal (Cakaloz, 2009). Children with symptoms of thalassemia, especially those who have experienced complications, require more excellent care and attention from their family.

Furthermore, the fact that thalassemia cannot be cured permanently requires children with thalassemia to perform regular blood transfusion to live. The transfusion is presented every two to four weeks (Mulyani, 2011). However, routine blood transfusion therapy will cause iron overload in the body, which in turn will require sailing therapy. This lifetime therapy requires constant care and attention from the family.

A person who provides care to a patient is called caregiver (Sukmarini, 2009). Family can provide caring support in different ways, such as emotional, physical, and financial support as well as coordinating with health care and social services, routine health care (getting medicines), personal care such as eating, bathing, and dressing, assisting homework and financial arrangements (Toesland, 2001).

Providing care and attention to children with thalassemia in the long term will impose a burden on the family. Caregiver burden is a multidimensional response with negative perception and stress resulting from caring for a sick individual (Zarit, 1980). According to Solve Elmstahl (1996), caregiver burden comprises five factors: general strain, isolation, disappointment, emotional involvement, and environment.

The burden might impact the caregivers both physically and psychologically. A research conducted by Sivansh Inamdar in 2008 revealed that 60% of parents of children with thalassemia are burdened and stressed due to the chronic nature of the disease. Furthermore, research by Pouraboli (2017) also mentioned that families whose children suffer from thalassemia in Iran felt psychological, financial, and isolation burdens, not to mention suffering from social stigma in the care situation.

Physical and psychological health of caregivers is negatively affected as a result of the burden imposed on them in the care situation. Parents of thalassemic children showed severe stress in parenting, and it was reported that 67.5% of parents experienced psychological distress (Ali, Sabih, Jehan, Anwar, & Javed, S. 2012). Besides, psychosocial problems are also experienced by parents in caring for children with thalassemia. The difficulties encountered by parents of children with thalassemia, among others, are that they concern about the child's physical weakness (caused by anemia), about financial difficulties, and the child's future (Prasomsuk, Jetsrisuparp, Ratanasiri, & Ratanasiri, 2007).

Influenced by either cultural and religious beliefs that view the course of life as predetermined and set in destiny, many people in Indonesia maintain the attitude of acceptance. (Koentjaraningrat, 2000). This attitude of acceptance is also reflected in coping with the fact that their children suffer from a chronic illness. Indonesian people, especially Sundanese ethnic group, has very close kinship ties (Sudiharto, 2007) and preserve a cooperation culture. When

a family member is down with the illness, the rest of the family will join together in caring for the ill by providing either physical, material, or emotional support. (Suprajitno, 2004). These traits are likely to have an impact on caregiver's burden in caring for children with thalassemia in Indonesia, which distinguishes them from caregiver burden in other countries.

According to our interview with the parent's thalassemic children, most of them revealed that they felt exhausted because they had to take their children for blood transfusion therapy every month. Some of them even had to skip work to be able to do that. They also felt exhausted because they were always so worried about the condition of their children that they did not have time to think about their own. Based on this phenomenon, this research focuses on the parents burden as caregivers of children with thalassemia.

Method

This research is quantitative and descriptive. This research was conducted at Sumedang Regional General Hospital (RSUD henceforth), West Java, Indonesia. The variable in this research is a single variable, which is a family burden as caregivers in thalassemic children with sub-variables of general strain, isolation, disappointment, emotional involvement, and environment. The population in this research is families who act as caregivers of thalassemic children at RSUD Sumedang. Using consecutive sampling technique with the criterion of biological mother or father from children six months old Thalassemia up to 12 years old who come to the hospital. On this research, 71 respondents participated in the period of 2 weeks (31 August–13 September 2017 2017).

The instrument used in this research was the Caregiver Burden Scale developed by Elmstahl in 1996. The tool comprises 22 questions covering 5 sub-variables of caregiver burden: general strain (8 questions), isolation (3 questions), disappointment (5 questions), emotional involvement (3 questions), and environment (3 questions). In doing so, a Likert scale of was used to determine the answers: "never", "seldom", "sometimes", and "often."

The instrument is a standard instrument with a validity value of 0.70. The instrument was back-translated. This instrument is already done back translate by Jasmia (2016) where the translation is done by linguists of the language centre, Faculty Culture of Padjadjaran University that translates from English to English by Tisna Prabasmoro, Ph.D and translated back into English by Rasus Budhoyono, M.Hum.

It using face validity, validated by 10 people with the same characteristics as the samples. Words that are not understood by the respondents were simplified so it would be easier to understand and answer the questions. Data analysis was conducted using descriptive statistical analysis in which parents burden was categorized into 3 proportions: mild average score 1.00–1.99, moderate average score of 2.00–2.99, and severe levels score 3.00–4.00. Further analysis of the burden of parents use in percentage.

Result

The table above shows that 48 respondents (67.6%) age between 18-40 (early adult), 60 respondents are female (84.5%) and

Table 1 Traits of Parent of Children with Thalassemia (n = 71)

Category		f	%
Age	18–40 years old (early adult)	48	67.6
	41–60 years (middle age)	22	31
	> 60 year old (elderly)	1	1.4
Gender	Female	60	84.5
	Male	11	15.5
Family Relationship	Mother	60	84.5
	Father	11	15.5

Education Level	Primary School	23	32.4
	Junior High School	24	33.8
	High School	19	26.8
	Vocational	1	1.4
	Bachelor's Degree	4	5.6
Employment Status	Employment	16	22.5
	Unemployment	55	77.5
Income	Under minimum wage	49	69.0
	Above minimum wage	22	31.0
Duration of Treatment	1–11 months	3	4.2
	1–5 years	16	22.5
	6–12 years	52	73.2
Number of children with thalasemia	1 child	61	85.9
	2 children	9	12.7
	> 2 children	1	1.4
Other support	Family	53	74.6
	Professional support	1	1.4
	None	17	23.9
BPJS/Other insurance beneficiaries	Yes	71	100
	No	0	0

Table 2 Parent Burden as Caregivers of Children with Thalassemia (n = 71)

Burden	f	%
Mild	36	50.7
Moderate	31	43.7
Severe	4	5.6

Table 3 Burden Level in Terms of Sub-Variables of Parents of Children Thalassemia (n = 71)

Sub-variables	f	%
General strain		
Mild	28	39.4
Moderate	33	46.5
Severe	10	14.1
Isolation		
Mild	54	76.1
Moderate	16	22.5
Severe	1	1.4
Disappointment		
Mild	19	26.8
Moderate	34	47.9
Severe	18	25.4
Emotional involvement		

Mild	51	71.8
Moderate	13	18.3
Severe	7	9.9
Environment		
Mild	17	23.9
Moderate	45	63.4
Severe	9	12.7

60 respondents (84.5%) are mothers of thalassemic children. 24 respondents (33.8%) are junior high school graduates, 55 respondents (77.5%) are unemployed, 49 respondents (69%) have income below minimum wage. 73.2% respondents have cared for their thalassemic children for 6–12 years. 61 respondents (85.9%) have 1 thalassemic child, 53 respondents (74.6%) have other family members helped caring for their thalassemic children, and 71 respondents (100%) are BPJS/other insurance beneficiaries.

The table above shows that 36 respondents (50.7%) participated in this research perceived mild level of burden. 31 respondents (43.7%) perceived moderate level of burden, while only 4 respondents (5.6%) who perceived severe level of burden.

The table above shows that, in sub-variable of general strain, 33 respondents (46.5%) perceived moderate level of burden as caregivers. In sub-variable of isolation, 54 respondents (76.1%) perceive mild level of burden. In sub-variable of disappointment, 34 respondents (47.9%) perceive moderate level of burden. In sub-variable of emotional involvement, 51 respondents (71.8%) perceive mild level of burden. In sub-variable of environment, 45 respondents (63.4%) perceive moderate level of burden.

Discussion

Based on the result, it was found that the level of caregiver burden among parents of children with thalassemia are generally mild (50.7%), while 43.7% of the respondents perceived moderate level of burden, and only 5. 6% of the respondents that perceived severe level of burden. The burden of the elderly as a caregiver is the mental pressures or loads that appear on the parents who care for individuals with chronic disease. Caregiver tends to lack of rest, less intake of food, and when the pain usually does not come to health services, it would have an effect on daily activities and care given to the children of thalassemia. (Barbara, 2015).

The burden of the elderly at mild levels indicate parents are having a little trouble on a general strain for responsible care, a little experience feelings of isolation or feeling disappointed, and a little experience difficulties in the environment. The perceived lightness of burden likely will not interfere with the activities of daily caregiver.

Parents believe that the child is a mandate from God that must be preserved. Although the child's condition however and though treatment costs a pricey parents will strive to take care of children (Ambarsari, 2012).

Based on the sub-variable of the general strain, the question item with the highest level of burden is concerning responsibility for the welfare of the child. This is possibly because, according to Friedman (2010), one of the primary functions of family is to provide the essentials to keep the family healthy. The health care function of this family member is a function to carry out health care practice, which is to prevent disease and to care for sick family members. Therefore, families tend to feel responsible in caring for sick their members and responsible for their well-being.

The fact that most of the respondents were mothers of children with thalassemia is most likely the contributing factor to the high level of burden. In Indonesia, many people believe that it is almost exclusively a mother's role to take care of children (Hanifah, Mediani & Nurhidayah, 2018). This is in accordance with Begum (2016) in Jasmia (2017) who stated that women are assigned with domestic

responsibilities, including taking care of family members. Therefore, the burden perceived by female caregivers is higher than their male counterparts. In the current study parents, mostly mothers (84.5%) takes his son for medical treatment undergoes mental burden is light (50.7%).

The next question item with the second highest level of burden is concerning insoluble problems during treatment. One of the tough problems that caregivers encounter during blood transfusion therapy is a shortage of blood supply from the Indonesia Red Cross Society. This condition forces them to be able to find blood donors for their children. This problem is in accordance with the research conducted by Prasomsuk, Jetsrisuparp, Ratanasiri, & Ratanasiri, (2007) which revealed that one of the problems experienced by parents of children with thalassemia is getting further treatment for their children, such as splenectomy and blood transfusion therapy.

In the sub-variable of isolation, most of the caregiver perceived mild level of burden (76.1%). Most of the respondents did not experience deteriorating relationships with friends and relatives. Family and friends play an important role in sharing information and experiences about home care and treatment (Prasomsuk, Jetsrisuparp, Ratanasiri, & Ratanasiri, 2007). A good relationship with friends contribute positively to caregiver burden, especially in terms of isolation. Sudiharto (2007) said that the people of Indonesia especially the Sundanese people have very close kinship ties, when there are family members who are sick then the rest of the family will alleviate the burden of isolation.

Burden on caregiver on sub-variables disappointment, a small portion of respondents experienced high disappointment (25.4%). Parents of children with Thalassemia wish all their family members to be in good health and without any abnormalities. The family realizes that thalassemia is an incurable disease, but they expect their child's health to improve so that they can live with them as long as possible, get an education as high as possible and have a good future (Prasomsuk, Jetsrisuparp, Ratanasiri, & Ratanasiri, 2007). High expectations led to disappointment and burden on caregivers. Besides that, parents thalassemic children were disappointed with the present health services, the amount of information provided to them, the means of transport and their financial conditions (Pruthi & Singh, 2010).

It was also revealed that most of the respondents complained about the high cost of taking their children to the hospital. Moreover, 69% of the respondents participated in this research have monthly income below minimum wage. The high cost of thalassemia treatment financially burdens them as caregivers.

In the sub-variable of emotional involvement, 71.8% of the caregivers perceived mild level of burden. Emotional involvement perceived negative feelings parents caregiver when interacting with children suffering from Thalassemia. Research by Ambarsari (2012) mentions that in taking care of sick children, more patient and caregiver rests in God. The existence of a patient and a feeling of confidence to God that all that happened as a test and need patiently provide strength in dealing with issues related to child condition.

In this sub-variable, the question item with the highest level of burden perceived by caregivers is about being offended by and upset about their thalassemic children. According to Darwis (2006), everybody feels emotion. Caregivers of children with thalassemia are also human beings with emotion. When being confronted with their thalassemic children who (like any other children) sometimes could be disobedient, they might be upset and angry at them.

In the sub-variable of environment, 63.4% of the respondents perceived moderate level of burden. In the sub-variable of environment, the burden is caused by "anxiety of not being able to properly take care their children." Anxiety is unrealistic fear (Gunarsa, 2008). Anxiety is a subjective feeling of disturbing mental tension as a general reaction to the inability to cope with a problem or lack of security (Rochman, 2010). Thoughts about the future, stressful situations, fear of losing or fear of being left alone with great responsibility of caring for other family members experienced by the family are the cause of high anxiety (Duci, 2012).

Some of the effects of anxiety are sleep deprivation that might lead to irritability, inability to pay attention to the real problems, which in turn, will prevent an individual from functioning effectively (Cohen, 2002). Caregivers with excessive anxiety will undertake ineffective care that will result in a deterioration in the patient's condition.

Thalassaemia has an impact on children and families. Thus the family needs further information about thalassaemia and its treatment, emosional support, social support, professional suport and financial support (Mediani, Nurhidayah, Mardhiyah, & Panigoro, 2017).

Conclusion

It can be concluded that most respondents participated in this research showed mild and moderate level of burden in caring for children with thalassemia This means that parents can still overcome feelings or pressures felt both feelings of responsibility, feelings of disappointment, isolation, emotional and feelings of the influence of the environment of children with thalassemia, so it does not interfere with the activities and care of their children. Only few respondents perceived severe level of burden. This is probably influenced by Indonesian cultural background of the caregivers that views the course of life as predetermined and set in destiny, which help them in coping with the situation.

In addition, the kinship of the people of Indonesia, especially Sundanese ethnic group, is very close. They value the tradition of mutual cooperation in which the entire family help each other in taking care of a sick family member, either in the form of physical, material, or psychological support to lighten the burden. Based on the question items in the sub-variables of burden, there are some aspects that highly perceived by the caregivers participated in this research, such as question items related to great responsibility for the thalassemic children welfare, about the hope for a different life , financial cost, and about anxiety.

It is necessary for nurses to relieve caregivers burden through education, counseling, social support, improving the ability of coping mechanisms so that it will not affect the physical and psychological health of caregivers.

Based on the results of this study is expected clinical nurses and the community can provide nursing care to families of children thalassemia both to educate about the disease and knowledge about the treatment. Clinical nurses should make time for counseling with caregivers when they take their children for blood transfusion therapy. By doing so, the real problems can be identified and nurses will be able to design family care nursing plan that suit both the needs of the patient and the caregivers.

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The Effect of Logotherapy to Diabetes Mellitus Client's Meaning of Life

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Abstract

Diabetes mellitus is a chronic disease that caused meaning of life disturbance. Logotherapy is an intervention that could affect people life perspective. The purpose of this study was to analyze the effect of logotherapy implementation to the meaning of life in diabetes mellitus client. This study used quasy-experimental pretest-post-test with control group. The dependent variable was meaning of life, and the independent variable was the implementation of logotherapy. Sample in this study was 30 respondents, were taken by using consecutive sampling. The meaning of life were taken by using Purpose in Life Test (PIL Test) then analyzed by using Wilcoxon Sign Rank Test and Mann Witney U statistic test, a= £0.05. The result showed logotherapy had significant effect on meaning of life in the treatment group (p=0,001). Statistical test Mann Whitney U Test showed that there was a difference meaning of life in control group and the treatment group after implementation of logotherapy. It could be concluded that the implementation of logotherapy has an effect to increasing the meaning of life in diabetes mellitus client. Further study was recommended to developing deeper study that related to logotherapy in diabetes mellitus client.

Keywords :Diabetes mellitus, logotherapy, meaning of life.

Introduction

Diabetes Mellitus (DM) is one of the chronic disease that can cause disturbance to one's meaning of life. It is due to the many DM's accompany symptoms and unable to accept the sick condition feelings, lead to a minor, middle and major psychological disorder. Live in a DM condition leads to psychological problems such as anxiety, depression, and ability disorder, which can worsen the patient's blood sugar levels, also incapability in life (Kodl and Seaquist, 2008). According to the result of the first stage interviews in RSUD dr Sayidiman, most of the clients were complaining about the sick condition they experienced. Clients said they feel unable to adapt with the sick condition and the new circumstances. They said that their life is meaningless, and they are just a burden for the people around them. These statements indicated that someone is having a meaning of life's disturbance.

The meaning of life holds an important roles in human's life and can be used as the purpose of the life. It makes people lives their lives positively in every situation, including sick condition (Bastaman, 2007). DM disease is a chronic disease that cannot perfectly healed, needs a life-time treatment, and cause a deep psychological changes within patient (Watkins & Teasdale, 2001). The early sign from DM diagnosis were memory disturbance (especially short-time), orientation, patient become agitated, anxious, and hyperactive. Some patients can be quiet, withdraw from society, and less active than before (Sadock , 2010).

Directorate General of Disease Control and Environmental Sanitation (Ditjen P2PL) stated that WHO predicts an increase of DM patients in Indonesia from 8.4 million in 2000 to about 21.3 million by 2030. While the International Diabetes Federation (IDF) predicts an increase in the number of people with DM in Indonesia from 9.1 million in 2014 to 14,1 million by 2035. Based on data from health research, the proportion of DM patients in Indonesia aged more than 15 years is about 12 million people. And 2.5% or 605,974 people are in East Java (Riskesdas, 2013). From the preliminary study at RSUD Dr. Sayidiman Magetan, there are 5,879 DM patient visits in May 2015 to June 2016. The increase of DM patients each year, shows the greater duty of health personnel in providing management. Included in helping find the meaning of life of DM patient.

Research on the meaning of life in DM clients concludes that clients with DM who have discovered the meaning of life, have gone through different stages in each individual (Khotijah, 2016). Other studies explain the existence of psychological symptoms as a protective factor for patients with DM to recover is social support and meaningfulness of life. Phenomenological studies on the meaning of life of DM clients also found that the meaning of the life of clients with chronic diabetes mellitus in Semarang is in a state of suffering and deepening of spiritual value (Rochmawati, 2011).

Suffering is closely related to the tragic events that come from sickness and illness, wrong and sin, and death and being left. Long lasting suffering can cause stress, loss of life meaning, depressive disorder, even mental disorder with suicidal risk (Rüpke, 2010) This will not happen if the patient can find the meaning of life from the state of illness. To find the meaning of life, someone must go through five stages in the discovery and fulfilment of the meaning of life that is the stage of suffering, the stage of self-acceptance, the stage of finding the meaning of life, the realization of meaning, and the stage of living meaningful life (Bastaman, 2007). One method to find the meaning of the client's life in the aspect of nursing psychology is by using logo therapy or also called logotherapy (Tristiana, 2016). Logotherapy is generally described as a psychological style that recognizes the spiritual dimension of man in addition to the physical and psychological dimensions (Bastaman, 2007). The initial goal of logotherapy is to achieve a meaningful and happy life. Logotherapy is indicated to overcome the disorders of somatogenic neurosis, psychogenic neurosis, and noogenic neurosis. Somatic neurosis is a disturbance of feelings related to physical hendaya, psychogenic neurosis sourced from emotional barriers and noogenic neurosis caused by the fulfilment of meaningful life desires (Bastaman, 2007; Braun et al., 2002). The program of Logotherapy was

designed to help participants clarify values that were particularly meaningful to them, set reasonable goals, assure that the goals would actualize the participants' meaningful values, set practical plans to achieve the goals, identify participants' assets and deficits that would affect their attempts to achieve their goals, and intentionally incorporate the assets and deficits into the plans to achieve the goals to actualize the values (Robatmili, Shahrak, Talepasand, Nokani, & Hasani, 2015).

Studies related to logotherapy showed an influence on the meaningfulness of life, improve the ability to interpret life, reduce the response of significant helplessness (Ukus, 2015; Sarfika, 2012; Kanine, 2011). Based on the results of the study researchers are interested to perform logotherapy on DM clients as a standard therapy companion, so the client is able to achieve and improve the meaning of life.

Method

The research design used quasi experimental non-randomized pre and post-test control group design. The study population was all DM patients in RSUD Dr. Sayidiman Magetan in August–October 2016. The sample was 30 respondents divided into 2 groups with 15 respondents per group taken by using consecutive sampling technique. Inclusion criteria include DM clients experiencing life-meaning disorders aged 21–59 years, and is already working. While the exclusion criteria were DM terminal clients, having physical disabilities that interfere with activities (for example blind, deaf).

The dependent variable is the meaning of life condition of DM client in RSUD dr Sayidiman Magetan and the independent variable is Logotherapy. Logotherapy is given individually in 4 sessions by researcher. The first session is to identify problems encountered, the cause of the problems, discuss problem solving and reveal the desired expectations of current conditions. The second session, client was given stimulation of the creative imagination, chooses the most desirable expectations, reason for choosing the hope, and trying to find the meaning contained in each of the reasons. The third meeting is to find the meaning of life in the daily activities undertaken. In addition, the client is given a schedule sheet of daily activities so that clients can remember better what activities to do and take the meaning of the activity. The fourth session of logotherapy is the last session to evaluation was conducted that includes the client's opinions and feelings about logotherapy, mentioning the meaning of life found in everyday activities, revealing problems that have not been resolved and discussing follow-up plans with the therapist.

The researchers used two instruments, consists of Purpose In Life Test Questionaire (Schulenberg, 2011) questionnaire, adapted from Crumbaugh and Maholick (1964) with sub-seading by the researchers (Crumbaugh & Maholick, 1964), for the collection of dependent variable data. And the standard procedure operational (SPO) of logotherapy, referring to the logotherapy workbook by Kanine (2011) and Setyowati (2014) tailored to the subject of the study, for the collection of independent variable data (Kanine, 2011; Setyowati, 2014).

The collected data was analyzed by Wilcoxon signed rank test to determine the difference before and after treatment (different pre-test and post-test). Statistical analysis of the results from the questionnaire was then performed statistically using Mann Whitney to analyse the comparison between the control group and the treatment group. The degree of significance is determined by the if value of sig $p \leq 0.05$ then the hypothesis of the study is accepted, which shown that there was influence of logotherapy on the meaning of life of the diabetes mellitus client.

Results

Characteristics of Respondents

The largest number of respondents is male which is 19 people (63.3%). In accordance with predetermined inclusion criteria, age is grouped into ages 18–59 years and the largest percentage aged 51–59 years is 60%. Most of the respondent's education is a high school graduate of 14 people (46.7%). Based on the work, the largest number of respondents worked as entrepreneurs. Meanwhile, according to the duration of DM, the

Table 1 Distribution of respondent characteristics in treatment and control group (n = 30)

Respondent Characteristics	Treatment Group		Control Group		Total	
	n	%	n	%	n	%
Gender						
Male	10	66.7	9	60	19	63.3
Female	5	33.3	6	40	11	36.7
Age						
<30	1	6.7	1	6.7	2	6.7
31–40	2	13.3	1	6.7	3	10
41–50	4	26.7	3	20	7	23.3
51–59	8	53.3	10	66.7	18	60
Education						
Primary School	4	26.7	3	20	7	23.3
Middle School	3	20	3	13.3	6	20
High School	5	33.3	8	53.3	14	46.7
College	3	20	2	13.3	5	16.7
Occupation						
Entrepreneur	1	6.7	2	13.3	3	10
Employee	4	26.7	4	26.7	8	26.7
Laborers / Farmers / Drivers	6	40	4	26.7	10	33.3
Government Employee / Army / Police	4	26.7	5	33.3	9	30
Diabetes Mellitus duration						
< 1 year	4	26.7	5	33.3	9	30
1–5 year	6	40	5	33.3	11	36.7
> 5 year	5	33.3	5	33.3	10	33.3

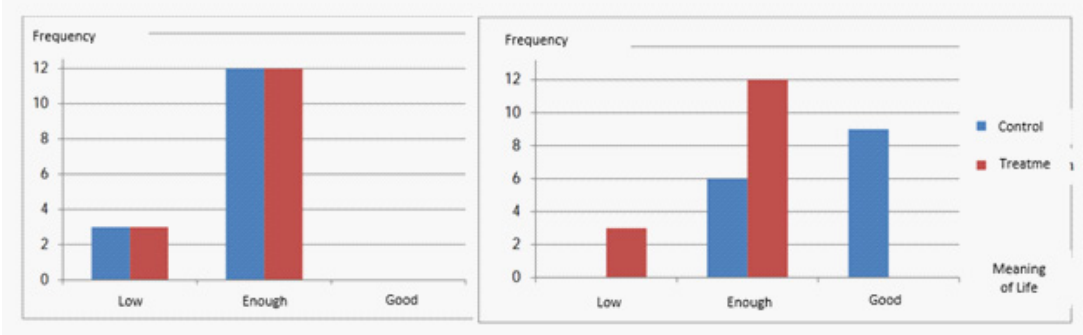

Figure 1 There are 6 respondents experiencing interruption of middle meaning of life and 9 respondents had a good meaning of life

Table 2 Data analysis of changes in the meaning of life of the DM client 's

Level Meaning of life	Treatment Group		Control Group	
	Pre	Post	Pre	Post
High	0	10 (66.7%)	0	0
Middle	12 (80%)	5 (33.3%)	12 (80%)	12 (80%)

Low	3 (20%)	0	3 (20%)	3 (20%)
Wilcoxon Sign Rank Test; p-value (within group)	0.001		0.317	
Positive Rank Test	11		0	
Negative Rank Test	0		1	
Ties	4		14	
Mann Whitney U Test; p-value (between group)	0.001			

highest data is 1–5 years, 36.7% (Table 1). Researchers do not provide type 1 or 2 types of DM because they aim to see the meaning of life for people with DM.

Effects of Logotherapy on the meaning of life of DM patients

The majority (80%) of the treatment and control group's meaning of life prior to the administration of logotherapy intervention showed that all groups experiencing impaired meaning of life in the form of middle meaning of life. The meaning of life of treatment group before and after intervention have different level of classification. There are 6 respondents experiencing interruption of middle meaning of life and 9 respondents had a good meaning of life (Figure 1).

The results of Wilcoxon sign rank test showed that there was a different meaning of life in treatment group between before and after intervention p = 0.001 (Table 2), but there was no difference of life meaning in control group p = 0.317. In the treatment group 11 respondents experienced an increase in the meaning of life (positive ranks).

Discussion

Based on the results of this study, almost 80% of DM clients who underwent treatment in hospitals Dr. Sayidiman Magetan experiencing impaired meaning of life. The data shows that there are 24 respondents experiencing enough meaning of life disturbance and 6 respondents with low meaning of life disturbance, with the total of respondent is 30 DM patients. The pretest result indicated that all respondents had a meaning of life disturbance. Respondents say ever since they suffered from DM, their life had change, experiencing heavy days, disturbed daily activities and jobs, feeling a confused life, being a burden to families and people around, activities are always the same, bored and saturated with routines, and feel the world is unfair. Respondents felt that there were no purpose in life, loss of life satisfaction, lack of freedom, and even suicidal thoughts. However, respondents are responsible for their health, respondents are still trying to perform treatment and obedient to the advice of doctors and health workers. DM disease can lead to psychological changes such as changes in mental processes, behaviours, and neurological functions that cause clients to be quiet, anxious, withdrawn from society, and inactive in social relations (Sadock, 2010). DM is a chronic disease that weakens the body so it can lead to depression and anxiety for the sufferer (Stuart, 2009). Psychological disorders in DM clients can also be caused by signs and symptoms experienced by clients (Price, 2006) who experience three typical symptoms (three-poly), namely polyuria (often pee), polydyption (often drinking), and polyphagia (often eating). Management that must be done by the DM clients throughout their life can also lead to depression and boredom. It is found in many DM clients who become research respondents. Clients say they feel bored for doing the same activities continuously, and feels that they are living a different life with others. The length of time a client suffering from a chronic illness can result in a psychological disturbance to the client, mainly due to the ongoing treatment. Increased cortisol hormone, epinephrine and norepinephrine are triggered by elevated glucose levels in the blood so that DM clients experience mood disorders such as being quiet, often daydreaming and angry without any obvious cause (Brunner, 2002).

Based on the results of existing research and theories, researchers assume that the

occurrence of the meaning of life disturbance on DM clients is influenced by internal and external factors. Internal factors are factors from within the client itself, including one of the signs and symptoms that accompany the DM disease. Treatment of signs and symptoms that arise often result in clients feel bored and saturated. Continuous injections of insulin or oral hypoglycaemic drugs to be taken daily, routine blood glucose examinations, and the need for regular physical exercise lead to new lifestyle changes in which the changes make DM clients feel that they have no freedom in life, boredom, despair and helplessness. If boredom is unavoidable and clients withdraw, then one tends to perform activities with unwillingness, and live despair life without the purpose and meaning of life. External factors include support from family and people around. It is found in DM clients at research where the average DM client fears about being divorced by their partner, feels unworthy of having a role in the family for not being able to fulfil obligations as a couple, feeling useless for not being able to play a role in the family, feeling worthless because they cannot make something good, feeling sad because cannot make their partner's happy, their body feels weak, lack of spirit and arise boredom for doing activity.

The treatment group experienced a significant increase in the assessment of meaning in life. There were 66.7% of clients who experienced improved meaning in life, and 33.3% of clients whose meanings of life were disrupted in the medium range. There is no longer a client who interpreted their life is low. The client said after doing logotherapy with the therapist, they can be more contemplating about what happened. The client understands about the illness, feels that their pain is a trial from God, become optimistic with their life, can do useful things even though they cannot engage in strenuous activities, can be useful for the family and the environment by doing the best thing they can, and feel daily activities is always a vigorous and a source of satisfaction. Significant increase of meaning in life in treatment group was different from control group. The control group did not experience any change in the meaning of life at all, which means the meaning of life in the control group is still disturbed. Clients still feel a burden to the family, unable to make family happy, feel bored with the routine, not able to understand about the meaning of life, life goals, life choices and have not been able to get the source of pleasure and satisfaction in life.

The data shows that most respondents coming from high school graduates (46.7%), and there are 16.7% of respondents were college graduates. The higher a person's level of education, the easier it will be to filter the information from the outside and get smarter in sorting through the problem. Logotherapy in this study is given individually to facilitate the client counselling with the therapist without feeling ashamed to tell the problem. Counselling always focuses on the problems experienced by clients. The process is consistent with the claim that logotherapy focuses on life issues related to death, freedom, powerlessness, loss, loneliness, anxiety and social isolation (Isaacs, 2001). Correspondingly, the discovery of the client's main problem which lead to the meaning of life disturbance is important to take into further counselling action by the therapist. Changes in the meaning of life that increases after the implementation of logotherapy, are influenced by the acceptance of clients to the activities and accuracy of therapists who perform a good logotherapy according to the guidelines. In the implementation of logotherapy, the researchers conducted interviews with clients and found it easier to give understanding to respondents who were a high school / college graduates than those whose an elementary and junior high school graduates. It shows that education level influences one's acceptance of innovation, the speed of innovation adoption process, and one's behaviour.

The implementation of logotherapy aims to help clients use the suffering they experience as a tools to find the purpose in life. Many people think that suffering is a fate that cannot be prevented. Logotherapy teaches to see the positive value of suffering, provides an opportunity to take lessons from suffering and provide comfort and

preparedness for dealing with a useful death. The client is given an understanding of how to face the toughest times, keep receiving the process of suffering even though DM disease is medically stated never to heal until the end of the life, and provide support to clients to always eager to live their life. Most clients can put themselves well, conduct therapy sessions smoothly without repeating, and most importantly the client feel their life is more meaningful and their after logotherapy. This proved to give a significant impact on increasing meaning of life in DM client in RSUD Dr. Sayidiman.

The results of this study were supported by a study of 30 respondents with chronic disease, that logotherapy is an effective therapy in clients with chronic diseases. Logotherapy has a positive and effective support for the psychosocial changes experienced by clients with chronic illness. From the results and statements, it can be concluded that logotherapy is an effective therapy used on clients with DM disease that have a decreased meaning of life. Logotherapy is given individually in 4 sessions. On giving the therapy, a therapist is required to act scientifically. The role of the therapist in carrying out logotherapy is to maintain intimate relationships and scientific separation, meaning that the therapist must create a relationship between clients by seeking a balance between two extremes, namely intimate relationships (sympathy) and scientific separation by handling clients as far as they are involved in therapeutic techniques. In the provision of intervention, an evaluation is conducted at the end of each meeting and at the beginning of the next meeting, in accordance with the opinion that changing the behaviour of a person needs to be accompanied by information and given repeatedly (Widhiarso, 2012).

After the logotherapy process, most clients begin to feel that the suffering they experience is a rebuke from God in order to become a better creature, so that the client can take wisdom. Clients address disease complaints wisely, those who consider themselves as a troublesome for their friends then communicate more with their friends and understand that people around were helping with sincerity, clients also start doing reciprocity by helping each other. The client feels his/her life is more meaningful and gets a different view of the suffering experienced. No more clients who feel different from others, because the client believes that all human life must be given different trials. Clients can spend the day feeling happy and doing daily treatment without any burden.

Respondents who have not been able to proceed to the next session should be repeating the previous session. Similarly, for respondents who have continued to the next session will be evaluated from the previous meeting. It can be concluded that the changes that occur in the respondent after the implementation of logotherapy are because the client is given knowledge repeatedly or reinforced at each meeting, and optimized in each session so that the process of learning can fosters motivation. There is a decrease in the number of the classification of low meaning of life after the logotherapy, as well as the decreased range of middle impaired meaning of life. Meanwhile, the qualification of good / normal meaning of life has increased significantly. The increased of the meaning of the client's life is greatly influenced by the success rate of logotherapy itself. In this case, the role of the therapist is very important, that the therapist must be able to place themselves equally between the client with the therapist, facilitate the client to convey the problem experienced with full confidence. Significant improvement in the meaning of life is also influenced by client demographic factors such as level of education, environmental factors, and family support factors. Individual logotherapy proven to bring positive impact for DM client, which is happiness. Thus the values of logotherapy philosophy can be achieved. Humans are creatures that are biopsychosocial and spiritual unitas though in a state of suffering, still given the opportunity to achieve a more meaningful life (the meaningful of life) (Yusuf et al., 2016).

The use of logotherapy in DM patients by nurses needs to consider the demographic factors of DM patients. Nurses also need to pay attention to the perceptions of DM

patients on their illness and self-acceptance of DM patients.

Conclusion

Providing individual logotherapy is proven to increase the DM client's meaning of life, so that clients can have an attitude of receiving with full patience, and be positive and live their life with happiness. The increased of the meaning of life is influenced by the acceptance of clients to the activities and accuracy of therapists who perform a good logotherapy according to the guidelines.

Ethical Clearance
This study has obtained the approval of ethical clearance from the ethics committee of the Faculty of Nursing Airlangga University Surabaya Indonesia.

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Exploring Nurses' Experience of Managing Attention and Mood in Post-Stroke Patients: A Qualitative Study

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Abstract

Attention is an important aspect of cognitive development in the perspective of information processing, whereas mood is an affective aspect relating to expectations about positive or negative feelings. Decreased attention and mood in post-stroke patients can cause instability, cognitive impairment, and long-term rehabilitation. These impacts affect the patients' activity daily living (ADL). Priority of post stroke patient care in hospital was priority on physical problem rather than psychological, social and spiritual problems. Nurses as caregivers in the hospitals should understand in manage bio-psycho-socio-cultural-spiritual problems in post-stroke patients. This descriptive study that used a descriptive qualitative research was conducted to describe the barrier of managing attention and mood in post stroke from the perspective of nurses. This research was a pilot study using qualitative design and involved six nurses at Temanggung General Hospital, Indonesia. The data collection was carried out using in-depth semi-structured interviews. The data analyzed using inductive content analysis. Five themes emerging from data included the nurse's focus on the physical problem, lack of awareness to manage attention and mood, unavailability of early assessment for attention and mood, family participation in nursing care and lack of information about the interventions in handling attention and mood. The initial assessment of attention and mood greatly encourages nurses to provide alternative or complementary nursing that can be administered in the hospital. Nurses' understanding of knowledge and skills are essential to prevent the impact of reduced attention and mood. The management of attention and mood should be supported by all professional health providers, and facilities in hospitals, as well as the role of the family.

Keywords: Attention and mood, management of attention and mood, stroke patients.

Introduction

The majority of Indonesians prefer to use government hospitals because the insurance provided by the Indonesian Government can only be used in government hospitals. Nurses as one of health workers in the hospitals play an important role in the effort to achieve health development goals (Kandou, 2015). The success of health care depends on the participation of nurses in providing quality nursing care. One of the attempts to provide quality nursing care and maintain patient safety is by applying the Standard Operating Procedure (SOP) in carrying out nursing actions. But the fact is that currently nurses in hospitals have not all implemented Standard Operating Procedures (SOP). This is evidenced from the results of the study that a total of 42 (100%) nurses at PKU Muhammadiyah Gombong hospital were not dutiful in applying SOP in carrying out nursing actions due to lack of socialization and evaluation of SOP at the hospital (Mutiana, 2014).

Stroke is one of conditions that requires hospitalization due to neurological damage. The neurologic damage of stroke causes both physical and psychological problems. According to the American Heart Association (AHA), physical problems in the form of disability in stroke patients remain dominant in the last decade. There are currently 3.8 million women and 3 million men living with stroke-related disabilities (Davis & Lockhart, 2016), whereas cognitive and affective disorders triple in post-stroke. Attention is part of the cognitive while mood is part of the affective mood is part of the affective.

Reduced attention in post stroke patients is characterized by the difficulty of concentrating and answering questions. Reduced attention affects disease recovery, instability, and poor performance degradation(Hyndman, Pickering, & Ashburn, 2007), can be predicted in functional recovery within the next 2 years(Robertson, Ridgeway, Greenfield, & Parr, 2007), affects function cognitive, among others, the ability to analyze, interpret, plan, organize and implement complex information (Hasra & Munayang, 2014). These affect the Activity Daily Living (ADL) (Hyndman et al., 2007).

Reduced mood in post-stroke patient is characterized by irritability syndrome, loss of interest, and concentration difficulties, as well as mood depression. Mood decline in post stroke patients refers to changes or emotional abnormalities that occur as a result of stress due to physical paralysis, which is also estimated due to the inability to use limbs maximally, the inability to communicate so that the post-stroke patients change or make adjustments when communicating (Lee, Seo, & Shim, 2017). The impact of mood reduction is the long-term rehabilitation and adjustment processes (Donnellan, Hickey, Hevey, & Neill, 2010), decreased cognitive abilities, dysphagia, low-level participation in daily activities Living (ADL), and social isolation (Hasra & Munayang, 2014). the higher the stroke level of stroke patients, the higher the level of dependence especially in ADL in stroke patients (Ratnasari & Solechan, 2012).

The low awareness of stroke risk factors, the lack of recognition of signs and symptoms of stroke, the impact of decreased attention and mood, not optimal stroke services and low adherence to therapy programs for prevention of recurrent stroke are problems that are common in stroke services in Indonesia (Irbantoro, 2016). therefore, comprehensive service development is needed . This comprehensive stroke unit aims to prevent more disabilities and deaths among stroke patients (Natasia et al., 2014).

Therefore, a qualitative study on nurses' experience in dealing with attention mood problems in post-stroke patients needs to be conducted. It aims to find out the nurses' responses in handling attention problems and mood of patients treated in Regency General Hospital Temanggung

Method

This research is a qualitative study employing the phenomenology approach. Data were collected from 6 nurses' interviews by selecting criteria. The criteria for nurses are between the ages of 20 and 40, men and women, have work experience in the room care of stroke patients of at least 2 years, graduates of Diploma 3 or undergraduate degrees. Interviews were conducted in

the discussion room at Flamboyan II, Temanggung Hospital. Before conducting an interview by giving a few questions, the researcher explained the informed consent, after the nurse agreed to become a research sample, it continued to fill demographic data. Voice recordersin cellphone was a tool for recapitulating the results of interviews, then the transcripts were made to determine the topic of this research.

The data collection was done by using semi structured interviews. The questions given to the participants include:
1) What is your experience with regard to nursing problems that arise in post-stroke?
2) What is the priority?
3) Do you know the definition of attention and how do signs and symptoms reduce attention of stroke patients?
4) Do you know the definition, signs and symptoms decrease mood in stroke patients?
5) How was your experience in treating patients with attention and mood disorders in post-stroke patients?
6) Is there an assessment format available to assess attention and mood?
7) What do you do when you meet a patient with attention and mood problems?
8) Do nurses use intervention to address the attention and mood derived from the results of the study?

Data Analysis

The content analysis guided by Elo and Kyngas (2008) was used to analyze the data. To ensure the trustworthiness, the researcher followed the inductive content analysis process. Started with open coding, all notes and heading were written in the text while reading it. The written material was read thoroughly, and as many headings as necessary were written down in the margins to describe all aspects of the content. The headings were gathered from the margins on to coding sheets, and categories were freely generated. After open coding, the list of categories was grouped under higher order headings and collapsed the similarly into broader higher-order categories. Finally, major themes were identified through interpretation as inductive content analysis. The use of quotation was presented in the findings of the study to support the themes.

Results

This research reveals 5 themes, which include the nurses' focus on the physical problem, lack of awareness in managing attention and mood, unavailability of early assessment for attention and mood, family participation in nursing care, and lack of information about the interventions in handling attention and mood. The initial assessment of attention and mood greatly encourages nurses to provide alternative or complementary nursing that can be administered in the hospital.

Theme 1: The nurses' focus on the physical problem

Experience is an event that has actually been experienced by individuals. Disclosure of experiences in narrative means expressing or exposing an event or experience that has been experienced in the order of time of occurrence.The following are the participants' statements related to problems that often occur among post stroke patients:
Physical problems identified from the interview:
"Most strokes experience weakness of the extremities, verbal communication, decubitus that occurs from the home. Usually, decubitus arise from home and is not treated with care and taken to the hospital already in a severe condition"

Psychological problems identified from the interview:
"Often the patient is afraid of not being able to heal, refusing his illness, dismissing God not as patient as if giving such a pain, angry without cause, even if anyone comes suspected"

Five nurses mentioned that physical problems in hospitals were more prioritized rather than psychological. This is expressed by the nurse mentioning the first handling of physical problems:
"Stroke patients have motion problems we usually do over baring. We can help when we do good activities to meet the needs of personal hygiene, collaboration with physiotherapy. Physiotherapy comes only one time. Usually, afternoon nurses do ROM to patients "

While handling psychological problems:
"Usually when we see an angry patient, we

let her in first so angry finish first, but to approach the family's habits at home patients if pain like this. If it is not angry just give advice to patients by motivating patients "
Four participants said that dealing with physical problems was a priority over psychological problems.
"Physical problems take precedence, because the frequent patients in the hospital, their his psychological problems are disrupted due to physical problems. Yes, we always use SOPs during the course of action to the patient, but usually for ROM, oral hygiene or the other "

Theme 2: Lack of awareness to manage the attention and mood

Nurses understand that the concept of attention and mood in post stroke patients will be understood from the understanding, signs and symptoms, and how to deal with the problem.
"From my experience, patients who have passed a stroke often have attention problems, confusion, sometimes disorientation. The purpose of the attention can be interpreted as possible. I know if you experience that we invite communication to be more focused and should be more patient ".

Theme 3: unavailability of early assessment for attention and mood

Psychological treatment of post-stroke patients can be done through appropriate assessments. Screening is a brief assessment using a tool that has been validated along with a clinical judgment to decide whether someone needs to be assessed further, monitored, or given access to psychological treatment.Nurses in the hospital have done the assessment according to the standard in hospital, but in the assessment did not assess attention and mood.

Summaries presented during the interview related to this theme are:
"We always use Standard Operating Procedures (SOP) when performing actions to patients. SOP in book form. The book is about 10 years. SOP of hospital nursing action overcome frequent physical problems, but is not available early assessment for attention and mood. So we never did "

Theme 4: Family participation in nursing care

The family role in patient care either in hospital or after returning from hospital.
Summaries presented during the interview related to this theme are:
"Nurses here perform routine nursing actions in the hospital, priority on physical problems, but usually if we have problems related to psychological problems more approach to the family and let the patient in a stable emotional state, just after doing roughly the patient's good new mood we communicate to the patient"

Theme 5: lack of information about the interventions in handling attention and mood

The handling of patients to overcome the attention and mood of patients in the hospital has not been done by nurses. However, much research on how to overcome attention and mood is very significant. The results of the research literature to address attention are Attention Process Training / APT, overcoming mood with motivational interview, attention and mood with NRE, overcoming cognitive and mood with natural interaction, listening to music andovercoming psychophysiology with aroma massage and foot bath.
Summaries presented during the interview related to this theme are:
"In hospitals there is never any intervention you mentioned. Here, it is only normal to perform nursing actions to overcome physical problems. Listening to music can become a therapy, but it has not been applied in the room here"

Discussion

Nurses working in stroke space hospitals have different perceptions of how to deal with attention and mood problems among post-stroke patients. Individual perception can be different, because the stimulus received by each individual is not the same. The acceptance of such responses will differ depending on the individual response (Braund, 2008). Feelings, ability to think, experiences owned by individuals are not the same. Thus, in perceiving stimulus,

each individual is different (Kozier, 2010). From the explanation, it can be said that the difference in perspective is a natural thing which happened.

Some nurses see how to deal with post-stroke nursing problems as a parenting activity that starts from assessment to evaluation by taking into account the principle of the human wholeness whole dimension called holistic. This view is gained on the basis of the knowledge they have gained while studying. This is in accordance with the concept as explained by Betty Newman in his holism concept, that man is a unified whole consisting of bio-psycho-socio-cultural-spiritual (Kozier, 2010).

The application of holistic principles to patients in the hospital has not been fully met, especially psychological problems, proved in this study that if the patient experiences symptoms of nurse mood reduction indirectly overcome it but the nurse lets the patient until the patient is cooperative with the nurse. This will result in decreased quality of nursing services in hospitals, this is in accordance with the results of research indicates that there is a significant influence between therapeutic communication on nurse service quality (Prismeiningrum, 2015). The quality of patient care depends on the care giver's ability to communicate with each other (Afriyani, 2011).

This was supported by the research of Ristianingsih et al., 2014 stating that nurses must implement the principle of holistic nursing care that includes biopsychososio and spiritual. And from the results of observations in this study nurses have a perception of the implementation of spiritual actions are not the nurses' responsibility in full because there is already a spiritual guide at the hospital. So that it can be said that nurses do not carry out holistic nursing. The need and spiritual care in carrying out the nursing process proved to be very accommodating both in terms of philosophy and practice. Therapeutic relationships are intertwined with the provision of appropriate spiritual care. (Azizah, 2008).

Supporting research also from Roatib et al. (2007) which states that the older the age and the higher the education shows the less motivation of nurses in applying therapeutic communication in the work phase. Though therapeutic communication is the most essential element in the treatment process, it is not only a supplementation. Therapeutic communication is influential in the healing process and at the same time forming new links. This is because in achieving the healing process nurses do not rely solely on medical action. Therefore therapeutic communication has an important role in achieving patient recovery that requires spiritual/emotional encouragement through approaches to patients with communication, especially in tone of voice, expression.

Approach to the family is done by the nurse when the patient shows the attitude of refusing to the nurse is evidenced by when the patient sees the mosquito, refuses, nurses approached the family. The family plays a role in determining how care or care is needed by a sick family member. Empirically it can be said that the health of family members and the quality of family life becomes highly correlated or significant. Families occupy positions among individuals and communities, so by providing health services to families, nurses get two benefits at once. The first advantage is to meet individual needs, and the second advantage is to meet the needs of society (Luthfa, Lukman, & Sari, 2016).

The magnitude of the family's role toward sick family members can also be explored in this study. The presence of a family that accompanies and helps, especially when the patient is sick can ease the patient's burden. This shows that the family acts as family care giver for the patient. Active family involvement is a functional family form and can provide optimal support in care, especially on the daily problems of the patient (Afriyani, 2011).

Early assessment of cognitive impairment is particularly important at the early diagnostic stage, whereas in the mood it also needs to be done routinely about one month after the stroke or just before the hospital's release if faster. The second assessment was given about 6 weeks after resignation or about three months after the stroke with further assessment given at 6 and 12 months to detect long-term problems that exist.

Management of patients during hospital

post-stroke between physical overcome is usually move position, doing wound care dekubitus, move the body parts of paralysis. while for attention and mood problem only approach to family. Whereas the results showed great results with some of these interventions. These interventions include Attention Process Training / APT, Motivational Interview (MI), listening of music, and the Natural Restorative Environment (NRE).

Attention process training (APT) is an intervention that reduces attention deficits after traumatic brain injury. The study was conducted in post-stroke patients, aiming to evaluate the effectiveness of APT in increasing attention and broader outcomes in stroke patients 6 months after stroke. Assessment results are done at 5 weeks and 6 months after randomization. The results showed that APT intervention resulted in a much greater increase of attention than in the control group or who received the standard from the hospital (Barker et al., 2013).

Motivational Interview (MI) is a speech-based therapy that has been applied to many health problems that require behavioral change but can also support adjustment. Studies of post-stroke patients in the intervention group received up to four sessions of 30 to 60 minutes of MI. In the early sessions, therapists set the agenda so that patients talk about their adjustment to stroke and current concerns. The results indicate that motivational interviews are significant to mood and reduce mortality 12 months post stroke (Watkins et al., 2011).

While the intervention with the handling of wider music that overcome the mood and post stroke cognitive. The musical intervention in this research is to provide music with their own portable CD player and music CD with any music genre. The results of this study indicate that recovery in verbal memory and focused attention areas increased significantly in the intervention group and not in the control group (Sa et al., 2008). These findings suggest that for the first time listening to music during the early stroke stage can improve cognitive recovery and prevent deterioration.

Whereas the results show that the natural environment is very influential on the feelings. More specifically, attention serves as a basic process involved in understanding the world and organizing thoughts and feelings (Berman, Jonides, & Kaplan, 2008). Poor attention has been shown to be associated with a decrease in performance in daily instructional activities of daily life (Hyndman et al., 2007). The increased demand for attention can deplete artificial neural networks and cause inadequate attention function (Cimprich & Ronis, 2013). The results of the review indicate that the environment can lead to the restoration of attention requiring mental effort (voluntary attention). Exposure to the natural environment can provide an attraction to restore one's attention from mental fatigue (Lindern & Lymeus, 2016). According to the Attention Restoration Theory (ART), interacting with environments containing inherently attractive stimuli calls for only voluntary attention, thus enabling directional attention mechanisms to be an opportunity to recharge (Berman et al., 2012). That is, the need for attention directed at such an environment is minimized, and attention is captured in a bottom-up by the features of the environment itself. Thus, after interacting with the natural environment, individuals perform better on tasks that depend on the ability of focused attention.

Conclusion

This preliminary study yielded five themes; all of which have interrelationships. The understanding of nurses in dealing with attention and post-stroke mood should be owned by nurses in the hospital. There is a decrease in attention and mood. Nurses need a family role as family care giver for patients. Active family involvement is a functional family form and can provide optimal support in care, especially on the day-to-day issues experienced by the patient. The availability of preliminary assessment of attention and mood issues and use of research results to address attention and mood in post-stroke patients is required by hospital nurses to prevent unexpected events.

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Analysis of Factor Affecting Nutrition Status on Children

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Abstract

The problem of malnutrition remains overlooked in Indonesia, especially on children, caused by various factors. Indonesia is the 17th country with 3 nutrition problems, including stunting (short body), wasting (skinny body), and overweight (obesity). This research aims to analyze factors affecting nutrition status on children in the area of West Java Province, including the mother's and the child's socio-demographics factor, and the child's health status. The research method was descriptive quantitative with cross-sectional approach. The number of samples is 810. The research was conducted in 6 districts that support Family Planning (KB), including Bandung District, Bandung City, West Bandung District, Subang District, Sumedang District, and Garut District. The quantitative analysis consisted of univariates using percentage and frequency distribution, as well as bivariate analysis using chi square test. The result of the research shows that nearly all toddlers have good nutrition status as much as 87.9%, and toddlers with malnutrition as much as 10.6%. The analysis factor shows that there is a relationship between the mother's age (p = 0.048; OR = 1.583), family income (p = 0.010; OR = 1.803), delivery complications (p = 0.008; OR = 2.091), provision of exclusive breastfed milk (ASI) at the age of 0–6 years old (p = 0.000; OR = 2.321), provision of exclusive breast milk and complementary feeding given to babies before 6 months old (MPASI) at the age of 6 months to 2 years old (p = 0.002; OR = 2.037), and the child's history of hospitalization (p = 0.008; OR = 2.055), while other factors are considered irrelevant. This research suggests that healthcare staff collaborate in providing knowledge to mothers on the provision of exclusive breast milk and complementary feeding as well as the prevention of illness on their children.

Keywords: Children, factor affecting nutrition status, nutrition status.

Introduction

The problem of low-quality citizenship is indicated by, out of many others, the prevalence of nutrition affecting the quality of human resources. This will lead to the loss of young generations and the nation's future economy (Fotso et al., 2012). One of WHO's SDG targets is preventing hunger. In 2025, such problems of malnutrition are expected to be solved.

Indonesia is one of the developing countries with a quite serious malnutrition problem. Few others also face similar problems due to improper food provision (Ningsih, Kristiawati, & Krisnana, 2014). Data from WHO (2010) discovered that 1.5 million children have died due to improper food provision and 90% of the cases occur in developing countries. Today, malnutrition remains a national problem unattended, especially on toddlers. This is because toddlers have a relatively fast growth, thus requiring the biggest portion of nutrition compared to other stages of development (Ningsih, Kristiawati, & Krisnana, 2014).

Global Nutrition Report (USAID, 2014) claimed that Indonesia is the 17th country with 3 main malnutrition problems to date, including stunting (short body), wasting (skinny body), and overweight (obesity). Data from Basic Health Research (Riskesdas) (2013) show that the prevalence of fat body at the age of 0-59 months, according to weight/height, is 11.8%. Meanwhile, data from Nutrition Status Monitoring (Pemantauan Status Gizi (PSG)) claim that the prevalence of fat toddlers in Indonesia with similar measurements reaches 5.3% (Kementerian Kesehatan Republik Indonesia, 2016). Data from Riskesdas (2013) also discovered that today's Indonesian children are suffering from malnutrition, knowing that 8 out of 100 children are obese. This prevalence is based on the index measurement of body mass divided by age on children aged 5–12 years old as much as 8%. WHO (2010) thinks that malnutrition is not a problem in a country if that country has a fat-toddler indicator above 5%.

Problems of nutrition are pertinent to a child lacking of nutrition at early age, impacting to his cognitive disabilities and behavior deceleration. A child's cognitive growth may also be affected by the resultant interaction between his brain and his environment. It also affects his intelligence, analytical thinking, and productivity level. Lack of nutrition in this age may be relevant to the risk of chronic disease such as obesity, heart and vein disease, hypertension, and diabetes. Parents, therefore, are responsible for providing adequate nutrition intake to support their child's cognitive development (Ministry of Health (Kemenkes RI), 2017; Mohd Nasir et al., 2012). It is one of the fundamental factors affecting the cognitive performance as a defense mechanism to nerve building and brain development (Kementerian Kesehatan Republik Indonesia, 2017; Mohd Nasir et al., 2012).

The nutrition status during the 1000 first days of birth (HPK), or also known as "heydays", will impact on the qualities of a child's health, intellect, and productivity in the future (USAID, 2014; Kementerian Kesehatan Republik Indonesia, 2013). Mothers and babies must have adequate and quality nutrition to ensure their own health and motoric, social, and cognitive abilities, as well as learning skills in the future. Children with malnutrition during their heydays will likely to face neurological issues, a decrease in learning abilities, a higher chance of dropping out from school, barriers in productivity and working motivation, a decrease in the ability of providing nutritious food, and a decrease in caretaking. These all will further result in the prevalence of malnutrition and poverty for more generations to come. Considering the importance of nutrition during heydays, prevention of nutrition problems, therefore, becomes the main priority to improve the life quality of future generations (Bappenas RI, 2012).

The efforts of prevention of nutrition problems must be adjusted with the collateral factors (Aridiyah, Rohmawati, & Ririanty, 2015). The causing factor is directly from the child's unbalanced eating pattern and contagious illness. On the other hand, indirect factors include food availability, environment sanitation, and upbringing such as eating pattern, provision of knowledge, behavior, skills, and healthcare service (Arifin, 2016; Kementerian Kesehatan Republik Indonesia,

2017; Subarkah, Nursalam, & Rachmawati, 2016). This research aims to analyze factors that affect a child's nutrition status as seen by the mother's and the child's socio-demography, and the child's health status.

Method

This research is a descriptive quantitative research utilizing a cross-sectional approach. The population in this research is Productive Couples (PUS) with such criteria as pregnant mother (first to third trimester) and/or mothers with toddlers. These samples were taken from 6 districts in the province of West Java. The determination of districts for sampling in this research is done based on the highest number of occurrence of malnutrition in West Java (Bappenas RI, 2012). The districts include Bandung District, Bandung City, Garut District, West Bandung District, Subang District, and Sumedang District with the total of population as much as 534,652 respondents. The minimal number of samples is based on the number of population according to the table of sample determining by Isaac and Michael with 1% significance rate and the total of population as many as ±550,000. Therefore, the minimal number of samples is 665-810. The number of samples used in this research is 810 respondents. Data collection is carried out by enumerators by visiting respondents to each district. Filling in the questionnaire by the respondent was accompanied by enumerators.

Sampling technique is done using cluster sampling from 6 district consisting of 6 villages that support KB; therefore, each village is represented by 135 respondents in each. In this research, 810 respondents from 6 KB villages in 6 districts in West Java. Out of 810 respondents, 735 of which are toddlers and mother with toddlers (89.3%), pregnant mother (8.2%) or 67 people, and pregnant woman with toddlers (2.5%) or approximately 20 people.

Data were collected by using questionnaire to measure: individual factors, consisting of the mother's history of pregnancy and medical records; socio-demographic factors, consisting of gender, age, education level, occupation, family income, health insurance, healthcare access, and behavior, including the family's knowledge and action in its sustainability, the effort of nutrition fulfillment on pregnant mother, antenatal check-up and secure delivery, exclusive breast milk provision, effort of nutrition fulfillment on toddlers, immunization provision, growth and development, and healthy life behavior on families (PHBS). Besides, sampling was also done by running through medical records taken from the Book of Mother and Child's Health to observe the health status of the mother and the child (nutrition problems, pregnant mother's anemia, a high-risk pregnancy), physical observation with anthropometry to observe nutrition status on toddlers classified as adequate nutrition, lack of nutrition, malnutrition, or over nutrition.

Data analysis was done using Chi Square and Spearman analysis to observe factors affecting nutrition status on children. Research relevant to humans must be done according to ethical principles. According to Polit and Beck (2008), researcher must provide protection toward individual rights involved in the nurse's research. Therefore, this research has guaranteed ethical consentment from research Ethical Committee Universitas Padjadjaran, with letter number: 1206/UN6/KEP/EC/2018. The implementation of this research was done using 3 months from October to December 2018.

Results

Table 1 Nutrition Status of Toddlers based on Weight/Age

Nutrition Status	Frequency (f)	Percentage (%)
Malnutrition	6	0.8
Lack of Nutrition	72	9.8
Adequate Nutrition	646	87.9
Over Nutrition	11	1.5

Table 2 Nutrition Status on Toddlers based on Distribution per District

Nutrition Status Indicator	Bandung City		Bandung District		West Bandung District		Subang District		Sumedang District		Garut District	
	f	%	f	%	f	%	f	%	f	%	f	%
Based on Weight/Age:												
Malnutrition	2	1.6	0	0	0	0	1	0.8	3	2.6	0	0
Lack of Nutrition	11	8.5	22	17.1	7	5.7	19	15.3	8	7	5	4.3
Adequate Nutrition	114	89.1	106	82.1	116	94.3	99	79.9	102	88.7	109	94
Over Nutrition	1	0.8	1	0.8	0	0	5	4	2	1.7	2	1.7

Table 3 Mother's Socio-Demographic Factor

Factors	Frequency (f)	Percentage (%)
The mother's age		
Early teens 12-16 years old	276	34.5
Late teens 17-25 years old	378	47.2
Early adults 26-35 years old	141	17.6
Late adults 36-45 years old	6	0.7
The mother's education level		
Elementary school	236	29.5
Middle school	328	40.9
High school	200	25.1
Diploma	10	1.2
Undergraduate	26	3.2
Postgraduate	1	0.1
Mother's Occupation		
Unemployed	647	80.8
Farmer	62	7.7
Private Employee	48	6.0
Self-Employed	31	3.9
Civil Servant	3	0.4
Others	10	1.2
Father's Occupation		
Unemployed	10	1.2
Farmer	90	11.2
Private Employee	208	26.0
Self-Employed	396	49.5
Civil Servant	40	5.0
Others	57	7.1
Family income		
IDR 1,500,000	365	45.6
IDR 1,500,000-2,500,000	271	33.8

IDR 2,500,000	165	20.6
Family Spending		
IDR 1,500,000	315	39.3
IDR 1,500,000-2,500,000	332	41.5
IDR 2,500,000	154	19.2
Health Insurance		
Negative	282	35.2
Positive	519	64.8
Access to Health Service		
Difficult	59	7.4
Easy	742	92.6
Caretaker		
Mother	604	75.4
Grandmother/Grandfather	153	19.1
Sibling	40	5.0
Creche	3	0.4
Help	1	0.1
KB Acceptor		
No	146	18.2
Yes	655	81.8
Types of KB		
Injection	440	67.2
IUD	68	10.4
Piil	105	16.0
Condom	5	0.8
Implant	24	3.7
MOW	12	1.8
Mikrogi	1	0.1
KB Information from Healthcare Staff		
Negative	35	4.4
Positive	766	95.6
Mother's Nutrition Status		
Very Skinny	25	3.1
Skinny	61	7.6
Normal	379	47.3
Overweight	180	22.5
Obese	156	19.5
Pregnancy Status		
Not Pregnant	715	89.3
Pregnant	86	10.7
Mother's History of Contagious Illnesses		

Negative	779	97.3
Positive	22	2.7
Mother's History of Chronic Illnesses		
Negative	768	95.9
Positive	33	4.1

Table 4 Relationship between Mother's Factor and Child's Nutrition Status

		Nutrition Status (Weight/Age)		p value	OR
		Malnutrition	Adequate		
Education Level	Middle school and under	61	452	0.783	0.935
		11.9%	88.1%		
	High school and higher	28	194		
		12.6%	87.4%		
Age	> 34 years old	36	53	0.048	1.583
		15.7%	23.0%		
	≤ 34 years old	194	452		
		38.4%	89.5%		
Number of Children	>2 children	18	137	0.831	0.942
		11.6%	88.4%		
	≤ 2 children	71	509		
		12.2%	87.8%		
Occupation	Employed	18	129	0.955	1.016
		12.2%	87.8%		
	Unemployed	71	517		
		12.1%	87.9%		
Income	≤ IDR 1,500,000	52	283	0.010	1.803
		15.5%	84.5%		
	> IDR 1,500,000	37	363		
		9.3%	90.8%		
Spending	≤ IDR 1,500,000	40	241	0.166	1.372
		14.2%	85.8%		
	> IDR 1,500,000	49	405		
		10.8%	89.2%		
Health Insurance Possession	Negative	34	227	0.572	1.141
		13.0%	87.0%		
	Positive	55	419		
		11.6%	88.4%		
Access to Healthcare Service	Difficult	5	54	0.376	0.653
		8.5%	91.5%		
	Easy	84	592		
		12.4%	87.6%		

KB Acceptors	Negative	14	79	0.353	1.340
		15.1%	84.9%		
	Yes	75	567		
		11.7%	88.3%		
Mother's Nutrition Status	Not Normal	42	349	0.227	0.760
		10.7%	89.3%		
	Normal	47	297		
		13.7%	86.3%		
Delivery Complications	Positive	21	83	0.008	2.091
		20.2%	79.8%		
	Negative	68	562		
		10.8%	89.2%		
Delivery Complications	Non-Healthcare Staff	7	47	0.842	1.088
		13.0%	87.0%		
	Healthcare staff	82	599		
		12.0%	88.0%		
Delivery Process	Special delivery	10	69	0.874	1.059
		12.7%	87.3%		
	Normal delivery	79	577		
		12.0%	88.0%		
History of Contagious Illnesses	Positive	3	20	0.889	1.092
		13.0%	87.0%		
	Negative	86	629		
		12.1%	87.9%		
History of Chronic Illnesses	Positive	3	30	0.588	0.716
		9.1%	90.9%		
	Negative	86	616		
		12.3%	87.7%		

Table 5 The Child's Demography and Health Status Factor

Factor	Frequency (f)	Percentage (%)
Gender		
Male	386	52.5
Female	349	47.5
Age		
Toddlers	733	99.7
Children	2	0.3
Immunization Completeness		
Non-Immunized	17	2.3
Partial Immunization	102	13.9
Complete Immunization	616	83.8
Immunization Schedule		

Not Immunized	17	2.3
Misscheduled Immunization	118	16.1
On-time Immunization	600	81.6
Status of Exclusive Breast Milk 0-6 Months		
Exclusive Breast Milk and Complementary Feeding	59	8.0
Exclusive Breast Milk and Formula Milk	117	16.0
Exclusive Breast Milk	555	75.5
Only Formula Milk	4	0.5
Status of Exclusive Breast Milk 6 Month-2 years old		
Exclusive Breast Milk, Formula Milk, Complementary Feeding (No)	150	20.4
Formula Milk and Complementary Feeding (No)	61	8.3
Exclusive Breast Milk and Complementary Feeding (Yes)	524	71.3
Age During Which Complementary Feeding is Given		
0 Month	2	0.3
1 Month	3	0.4
2 Month	4	0.5
3 Month	8	1.1
4 Month	19	2.6
5 Month	12	1.6
6 Month (suitable)	643	87.6
7 Month	33	4.5
8 Month	8	1.1
9 Month	1	0.1
10 Month	1	0.1
12 Month	1	0.1
History of Hospitalization		
Negative	624	84.9
Positive	111	15.1
Child's Medical Records		
Negative	649	88.4
TBC	18	2.4
ISPA/Pneumonia	45	6.1
Other Illnesses	23	3.1

Table 6 Relationship between Child's Health Status and Child's Nutrition Status

		Nutrition Status (Weight/Age)		p value	OR
		Malnutrition	Adequate		
Gender	Male	43	343	0.398	0.826
		11.1%	88.9%		
	Female	46	303		
		13.2%	86.8%		
Immunization Completeness	Partial	11	108	0.297	0.703
		9.2%	90.8%		
	Complete	78	538		
		12.7%	87.3%		
Immunization Schedule	Miss scheduled	15	119	0.720	0.898
		11.2%	88.8%		
	On-time	74	527		
		12.3%	87.7%		
Exclusive Breast Milk 0 – 6 Month	Non Exclusive Breast Milk	35	141	0.000	2.321
		19.9%	80.1%		
	Exclusive Breast Milk	54	505		
		9.7%	90.3%		
Exclusive Breast Milk and Complementary Feeding 6 Month – 2 years old	Negative	38	173	0.002	2.037
		18.0%	82.0%		
	Positive	51	473		
		9.7%	90.3%		
Start of Complementary Feeding	Unsuitable	14	78	0.330	1.359
		15.2%	84.8%		
	Suitable	75	568		
		11.7%	88.3%		
History of Hospitalization	Positive	22	89	0.008	2.055
		19.8%	80.2%		
	Negative	67	557		
		10.7%	89.3%		
Medical Records	Positive	13	73	0.360	1.343
		15.1%	84.9%		
	Negative	76	573		
		11.7%	88.3%		

Based on the table above, the nutrition status overall based on weight/age in 6 districts in nearly all cities are adequate (87.99%), but malnourished children reach up to 10.6%.

Seen from weight/age of the toddler's nutrition status (table 2) in 6 districts, nearly all of them have adequate nutrition, which is in Bandung City as much as 89.1%, Bandung District, 82.1%, Bandung Barat

District 94.3%, Subang District 79.9%, Sumedang District 88.7%, and Garut District 94%. However, Table 2 shows problems of malnourished toddlers. Out of 6 districts, 3 districs have malnourished and nutrition-lacking children from more than 10%, including Bandung City 10.1%, Bandung District 17.1%, and Subang District 16.1%. On the other hand, the 3 remaining districts have the percentage below 10%, including Sumedang District 9.6%, Garut District 4.3%, and West Bandung District 5.7%. Bandung District and Subang District are the 2 areas with the biggest portion of malnutrition cases, as much as 17.1% and 15.3%, respectively. The biggest number of malnutrition cases occurs in Sumedang District as much as 3.6%, followed by Bandung City 2.6%. Seen from above, Bandung District has the highest percentage for toddlers lacking of nutrition out of the 6 districts.

Overall, the prevalence of malnourished and nutrition-lacking nutrition in this research reaches up to 10.6%. The distribution of the nutrition status for toddlers each district can be seen in this table 2.

Table 3 above shows that the mother's age is highly varying, 47.2 mothers are aged 17-25 years old, 40.9% others are junior high school graduates, 80.8% others are unemployed, thus they take care of their own children 75.4%. The father's occupation is varying, but mostly are private employees 49.5% with average income lower than 1,500,000 rupiahs. The average family spending is not parallel with family income. As much as 41.5% of family spending is bigger than that of the income (1,500,000 rupiahs – 2,500,000 rupiahs). As much as 64.8% of all families have health insurance and 92.6% of which have easy access to healthcare service. As much as 81.8% of mothers have used family planning and 67.2% of mothers use injection KB, while 9.6% get information about KB from healthcare staff. The mother's nutrition status is also varying, around 47.3% have adequate nutrition, and 3.1% lack of nutrition. As much as 89.3% of them are non-pregnant woman, 97.3% mothers do not have contagious illness history, and 95.9% mothers do not have history of chronic diseases.

Table 4 shows that the mother's socio-demographic factors are relevant to the nutrition status is the mother's age, family income, and delivery complications (p value < 0.05), while other factors are considered irrelevant. Based on the OR value, it is found out that mothers above 35 years old carry the risk of having malnourished children 1.583 times bigger than those aged under 35 years old. In terms of family income, families having income less than 1,500,000 rupiahs carry the risk of having malnourished children 1,803 times bigger than those earning more than 1,500,000 rupiahs. On the other hand, mothers who have a history of delivery complications carry the risk of having malnourished children 2,091 times bigger than those who do not.

Table 5 shows that there are 386 male children (52.5%). Nearly all children are toddlers (99.7%). Based on Immunization status, nearly all children get complete Immunization (83.8%), and nearly all get on-time Immunization (81.6%). Besides, all children get exclusive breast milk 75.5%). Most respondents get complementary feeding after the child is 6 month old (71.3%) and nearly all respondents get complementary feeding after the child is 6 month old (87.6%). On the other hand, based on the child's health status, nearly all children have never been hospitalised (84.9%), and nearly all of them do not have any history of contagious illness (88.4%).

The table above shows the relationship between the child's health factor and their nutrition status. Based on the p value, it is known that the factor of exclusive breast milk provision on toddlers before six months old, exclusive breast milk and complementary feeding provision on toddlers aged 6 months - 2 years, and history of hospitalization with p value < 0.05. This shows that there is a significant relationship between that variable and the child's nutrition status.

Based on the OR value, it was found out that a child not given exclusive breast milk only before 6 months old are at risk of being malnourished 2.321 times bigger than those who do. This also applies to child who do not get exclusive breast milk and

complementary feeding, they are at risk of being malnourished 2.037 times bigger than those who do at the age of 6 months until 2 years old. On the other hand, the child with history of hospitalization have 2.055 risk bigger of having malnourished than those who do not.

Discussion

Overall, the toddler's nutrition status based on Weight/Age in 6 districts in most toddlers have adequate nutrition (87.9%), but it can be seen that malnourished and nutrition-lacking toddlers reach 10.6%. The nutrition status in 6 districts in nearly all children are categorized under "adequate," specifically in Bandung City 89.1%, Bandung District 82.1, West Bandung District 94.3, Subang District 79.9, Sumedang District 88.7, and Garut District 94. Therefore, the problem of malnourished toddlers is still apparent. Out of these 6 locations, 3 districts have a more than 10% of malnourished and nutrition-lacking toddlers including Bandung City 10.1%, Bandung District 17.1%, and Subang District 16.1%. Meanwhile, the remaining 3 districts have the percentage below 10%, including Sumedang District 9.6% and Garut District 4.3%, West Bandung District 5.7%. Bandung District and Subang District were the two areas with the biggest portion of malnourished toddlers; that is, 17.1% and 15.3% respectively. The biggest number of malnourished toddlers is in Sumedang District as much as 3.6%, followed by Bandung City 2.6%. Overall, the prevalence of malnourished and nutrition-lacking toddlers reaches as high as 10.6%. This number is generally lower than the national prevalence, which is 17.7 % (Riskesdas, 2018), however this still exceed WHO parameter line in terms of the number of malnourished toddlers, which is 10%.

Nutrition problems, especially malnourishment and stunting in toddlers, may the child's growth, with negative impacts lasting for future life, such as intellectual downturn, vulnerability of degenerative and non-contagious illnesses, productivity decrease, which then leads to poverty and the risk of having babies with low weight (UNICEF, 2013; UNICEF, 2012; WHO, 2010; Adair & Guilkey, 2007). Other impacts of malnutrition during heydays are always associated with lack of specific vitamin and minerals and other micronutrients. Past research regarding the impact of lack of micronutrients, from the increase of risk on contagious illness to death. The consequences for children is grave. Lack of pure protein in advanced stage may cause kwashiorkor during school age and adolescents.

The relationship between the mother's factor and the child's nutrition status can be seen from p value on the table. If p value shows > 0.05, it means there is no relationship whatsoever. Otherwise, it shows a significant relationship. On the table, it was found out that the mother's factor relevant to the child's nutrition status is the mother's age, family income, and delivery complications. The results of this study are in line with Anugraheni and Kartasurya's research (2012) and Assefa, Belachew, and Negash's research (2013).

Based on the OR value, a mother aged above 35 years old has the risk of malnourished baby 1.583 times bigger than those aged below. This is parallel with research by Khotimah and Kuswandi (2014) claiming that age is an important indicator in determining one's productivity; younger people tend to have higher productivity level, while older ones tend to have lower. On the other hand, Harlock (2000) in Khotimah and Kuswandi (2014) claim that the older someone gets, the higher his level of knowledge is. According to Khotimah and Kuswandi (2014) and Astari, Nasoetion, and Dwiriani (2005) age is one of the factors that can describe how mature someone is, especially in terms of eating pattern, which will impact to the nutrition status. Therefore, younger mothers tend to create more varying eating pattern for their children, resulting in better nutrition status for both.

On the family income factor, it was known that families with income less than 1,500,000 rupiahs have the risk of malnourished toddlers 1803 times bigger than those who earn more. Limitation in income also determines the quality of food.

it is undeniable that what a family can earn will show in the food preserved in the dining table. Income is the main indicator relevant to food quality. The more a family can earn, the more is the quality of the food they consume. This argument sounds logical, knowing that a person can only eat what he can afford. Low income also leads to low purchasing power; this brings about many complications for the health of the family and the baby's nutrition status (Khotimah & Kuswandi, 2014). The result of this research is also suitable with a literature claiming that poverty is the main cause of malnutrition, being the first of the list (Suhardjo, 2002). If seen from the characteristics of family income, the root of malnutrition problem lies in economic crises. Most toddlers having difficulty growing physically are born in low-economy family (Aridiyah, Rohmawati, & Ririanty, 2015).

On the other hand, mothers who have delivery complications, have the risk of malnourished toddlers 2091 bigger than those who do not. These complications include anemia, hypertension, and hyperemesis. All will hamper the fetus's growth and development inside womb, so that the baby will be born with lower body weight (BBLR) which also impacts on his nutrition status (Karima & Achadi, 2012).

Table 6 shows the relationship between the child's health and his nutrition status. Based on the p value, the factor of exclusive breast milk provision on toddlers before the age of 6 months old, exclusive breast milk and complementary feeding provision for toddlers at the age of 6 months - 2 years old, and history of hospitalization have p value < 0.05. This shows that there is a significant relationship between that variable and the child's nutrition status. The results of this study are in line with Tan,s research (2011).

Based on the OR value, children who are not given exclusive breast milk only before 6 months old, carry the risk of malnutrition 2.321 times bigger than those who do. This is parallel with research from Nilakesuma, Jurnalis, and Rusjdi (2015) showing that toddlers getting exclusive exclusive breast milk have 80% normal nutrition status. This also applies to those who only get exclusive breast milk and complementary feeding carry the risk of malnutrition 2.037 times higher than those who get both at the age of 6 months to 2 years old.

The less frequency of exclusive breast milk provision becomes one of the triggers of malnutrition on toddlers, which may be caused by past experiences. A good exclusive breast milk provision by the mother will help balance the child's nutrition. This is because at the age of 0-6 months, the mother will create an immunity system for the toddlers, preventing them from contagious illnesses. Afterwards. at the age of 6 months, the toddler is given complementary feeding in sufficient amount and frequency, so that their nutrition level is fulfilled. The lower the frequency of exclusive breast milk provision, the higher the risk of malnutrition to toddlers, seen from both weight/age and length/age indices.

A good provision of exclusive breast milk by mother will balance the child's nutrition so that his development goes normally. Exclusive breast milk is highly required during the baby's development period so that the nutrition is fulfilled. Therefore, it is mandatory that a mother provide exclusive breast milk to babies until 6 months and keep providing until the baby reaches 2 years old. (AL-Rahmad, Miko, & Hadi, 2013). This research supports the Health Department claiming that issues during the baby's development is caused by lack of nutrition since birth, providing complementary feeding too early or too late, complementary feeding does not suffice the baby's needs or the providing pattern is less proper, as well as inadequate baby treatment. In this research, it can be concluded that there is a significant relationship between exclusive breast milk provision and the toddler's nutrition status ($p = 0.000$). This argument is strengthened by research from Giri, Suryani, and Murdani (2013) that mothers giving exclusive breast milk tend to have toddlers with better nutrition status than mothers who do not.

On the other hand, the child with history of hospitalization carries the risk 2.055 times bigger of malnourishment than children who do not. The status of lack of nutrition faced by toddlers is caused by the factor of history of contagious illness. This must be faced by the mother alone. This means that the history of contagious illness in toddlers is relevant to the fact that he has been infected

on the respiratory system called ISPA; other illnesses include tuberculosis. All illnesses were faced by the toddlers themselves due to the amount of bacteria from food and non-hygienic environment. Such medical records allow the children to undergo hospitalization. Therefore, that very record is what hampers the nutrition status to be better (Handayani, 2017).

Conclusion

The research was done in 6 districts including Bandung City, Bandung District, West Bandung District, Subang District, Sumedang District, and Garut District. In general, the prevalence of toddlers with malnutrition reaches 10.6%. This number is collectively lower than the national prevalence (17.7%) (Riskesdas, 2018), but it exceeds the target from WHO (10.0%). Therefore, this research concludes that there is a relationship between the mother's age (p = 0.048; OR = 1.583), family income (p = 0.010; OR = 1.803), delivery complications (p = 0.008; OR = 2.091), provision of exclusive breast milk at the age of 0-6 years old (p = 0.000; OR = 2.321), provision of exclusive breast milk and complementary feeding at the age of 6 month-2 years old (p = 0.002; OR = 2.037), and the child's history of hospitalization (p = 0.008; OR = 2.055), while other factors are irrelevant. Mothers with the age above 35, family with income less than 1,500,000 rupiahs, mothers with delivery complications, children not given exclusive breast milk before 6 months old, children not given exclusive breast milk and complementary feeding, and children with history of hospitalization-all these factors lead to them having bigger risks of malnutrition. Therefore, the research suggests that healthcare staff collaborate from all sectors to provide health education on the provision of exclusive breast milk and complementary feeding as well as on the prevention of illness on children.

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Psychometric Evaluation of Instruments Measuring The Older Adult's Functional Status in Indonesian

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Abstract

For year research on quantifying how well individual's function has been reported. Assessing function is particularly important in the older adults, as the prevalence of functional disability increases with age. In Indonesia, there is a lack of studies that measure the functional status of the older adults. There is even less research on evaluating the psychometric properties of an instrument. Therefore, this study aimed to compare the psychometric properties of the evidence supported functional status instrument consisting of the Short Physical Performance Battery (SPPB), the Functional Status Questionnaire (FSQ) and the Physical Performance Test (PPT). This study using the validation design with descriptive approach. And 401 subjects aged more than 60 years old were recruited purposively from five districts in Aceh. Every instrument showed good validity and reliability and has been used either for research purposes or in clinical setting. All subjects completed the FSQ, SPBB, and FSQ assessment. Correlation between SPPB and PPT were higher than FSQ when assessed for convergent validity the FSQ had comparable correlations with the reported health status. However, relationship between SPPB, PPT and FSQ were inconsistent. The findings of this study is expected to support the psychometric properties of all three instrument for functional status assessment in Indonesian Older adults, and SPPB appear to be the best among the other instruments to use in the nursing practice.

Keywords: Assessment, functional status, indonesian older adults, instrumentation.

Introduction

Functional status has evolved into one of the patient's outcome criteria and it is an important part in measuring the older adults' health condition. Functional status describes as the patient's perception of how they function on a daily basis (Wang, 2003). Maintaining and enhancing the individual's ability to gain functional independence in self-care, mobilization and social activities has been widely identified as the goal of nursing service delivery. Even some nursing theorists such as Dorothea Orem and Sister Calista Roy incorporate functional status into the theoretical frameworks of their theory. In addition, functional status also has been included into the outcome criteria of nursing intervention (Doran, 2011).

The older adults often come to health care services with acute or chronic health problems that affect their functional ability. Decline in functional ability is often followed by a decrease in independence. However, this process is not unchangeable, it can be prevented by recognizing the signs of functional degradation so that appropriate interventions can be determined to prevent functional decline (Quinn, McArthur, Ellis, & Stott, 2011).

Over the past two decades, there has been considerable progress in the assessment of functional status and disability in the older population. Older adult who lives in the community, screening and assessment are key factors for detecting early onset of functional and disability deficits. Functional assessment provides guidance for determining gerontology nursing interventions, and also provides baseline data for evaluation of the effectiveness of interventions. Functional status is beneficial to study because it can be used as a significant clinical predictor, and also indirectly can be utilized as disability predictors, placement in institution and even death (Gill, 2010). Therefore, classification and functional assessment of the older adults greatly affect nursing practice, health care systems, as well as for researchers and policy makers (Cieza & Stucki, 2008). However, the choice of appropriate instruments depends on the measured constructs, the ecological aspects of the instrument and their validity and reliability (Freiberger et al., 2012).

Functional status often assessed by physical performance tests, in which an individual is required to perform a specific task (or set of tasks) and objectively evaluated, by default using predetermined criteria, which may include counting repetitions or corresponding activity times (Gill, 2010). There are several instruments to measure functional status currently available, but most of these instruments are used in patients undergoing rehabilitation programs or with certain disease conditions such as patients with dementia and mentally impaired patients, therefore not all instruments are suitable for assessing functional status in general older adults.

After extensive literature review, the researchers found three commonly used instruments for measuring functional status and could be used in the older adult's population they are: (1) Short Physical Performance Battery (SPPB) (Guralnik et al., 1994), (2) Functional Status Questionnaire (FSQ) (Cleary & Jette, 2000; Jette et al., 1986), and (3) The Physical Performance Test (PPT) (Reuben & Siu, 1990; Sherman & Reuben, 1998). The criteria used to determine the instrument to be used for this study include (1) has passed the validity and reliability test, (2) easy to use (no special training required), (3) free of charge, (4) required short time for the assessment for a maximum of 10 minutes and (5) can be used for the older adults who are less educated.

According to Caprio and Williams (2007), the most commonly used instrument to assess functional status is Katz Index and Barthel Index. Katz Index usually used to examine the functional status of a person in performing their daily activities and Barthel Index was used to examines the functional capabilities of individuals day to day activity and mobility (Mahoney & Barthel, 1965; VanSwearingen & Brach, 2001; Zeltzer, 2008). However, both instruments only focus on a person's ability to perform daily activities, while functional status not only examines ADL but also physical, emotional and social skills. In Indonesia the instrument used to assess functional status is still very limited. The SPBB, FSQ, and PPT are not too often used in Indonesia although

the psychometric properties of these three instruments have been recognized globally (Cleary & Jette, 2000; Freiberger et al., 2012; Gill, 2010). In addition, systematic reviews from the literature review have confirmed the validity and reliability of SPBB, FSQ and PPT, even recommending the three instruments to be used in clinical practice (Freiberger et al., 2012; Moore, Palmer, Patterson, & Jeste, 2007). However, no prior studies have compared the psychometric properties of the three instruments was found. Based on the above explanation and taking into account the limited research in the older adult's population with regard to their functional status measurement, the researcher is interested in conducting research to determine which of these three instruments is most suitable for use in the context of older adult's population in Indonesia. Moreover, this study also compared the validity and reliability of SPPB, FSQ and PPT.

Method

Research subjects were recruited through direct contact, after getting permission with the village head. This study recruited subjects by purposive sampling that is the selection method based on certain requirements, they are: (1) aged 60 years and above (2) did not suffer severe cognitive impairment as evidenced by the Short Portable Mental Status Questionnaire (SPMSQ) with score less than 8 (severe cognitive impairment). For validation research such as this research, random sampling technique is not very necessary because the sample in this research were considered to be homogeneous. The study recruited 401 samples of older adults living in the community, most sample assessed at their homes, some of them were evaluated at the primary health care center and some were at village activity center. Data collection is conducted by 5 enumerators who have been trained prior to data collection.

After the verbal informed consent, respondent was asked to fill out the demographic data questionnaire and Functional Status Questionnaire (FSQ) through a guided interview, followed by an assessment using the Short Physical Performance Battery (SPPB) and Physical Performance Test (PPT) form. A summary of the overall research instruments is provided in Table 1.

FSQ is a multi-item instrument and is a self-administered instrument type. In this study we used all components of the FSQ consisting of (1) Basic Activities of Daily Living (FSQ BADL), (2) Intermediate Activities of Daily Living (FSQ IADL), (3) Psychological Function (FSQ FP), (4)) Social function/role (FSQ FS), social activities (FSQ FSKS), and quality of social interaction (FSQ FSKIS) and (5) single item consisting of 6 questions (IT). The FSQ asks respondents to indicate their function from 4 weeks before. Response options for the FSQ show the degree of difficulty felt related to the tasks in the FSQ item statement, and the choice of answers given between: usually can be without difficulty, little difficulty, many difficulties, usually not done for health reasons, and usually not done because other reasons. Scores for each sub-scale range from 0, indicating the worst function, to 100, indicating the best function. The warning zone is under 90 and 73 for BADL and IADL sub-scales. If patient or respondent scores are in the warning zone then according to the assessment of various interdisciplinary groups they have impaired function and should receive clinical attention (Jette et al., 1986).

SPPB and PPT are instruments used to evaluate the ability of respondents to perform a series of tasks. SPPB consists of three assessment hierarchies that start from the balance test, walk speed test and standing test from the chair five times. Each assignment is scored from 0 (poor performing task) to 4 (execution of good task) (Guralnik et al., 1994). PPT can ideally be completed within 5 minutes and requires only one checker and several tools that are easy to find. Seven physical functions are assessed, among others: (1) write the phrase "whale living in the blue sea", (2) simulation of eating, (3) lift the book and put it on a shelf that is higher than the respondent's arm length, (4) wear and remove jacket , (5) take a coin from the floor, (6) rotate 360 degrees, (7) walk 50 feet, (8) using stairs for one try, and (9) using stairs for several times. Each item is scaled 5

points (0–4), 0 indicates "inability to perform task" and 4 indicates the fastest or best time to perform the task. A high score means the respondent has a good function, the best score is 36 (D. B. Reuben & Siu, 1990). For this study we used a total of 9 items, for respondents who did not have stairs in their home, data collection was performed in village activities centre.

Before the instrument administered, all of the tool have been through the process of back translation, which is a process of translating an instrument using a bilingual expert (Brislin, 1970). The instrument in this study was originally in English, therefore the first step was to translated it into Indonesian by a bilingual translator, then translated back to English by a different bilingual translator. The second English version is compared to the original version to see if there is any difference in meaning. Due to the absence of meaningful meaning differences, the translated instrument in Indonesian can be used for this research.

Data analysis for this study consist of descriptive and inferential statistic. Descriptive statistics were used for analysing socio-demographic characteristics in form of frequencies, percentages, means, and standard deviation. For inferential statistics pearson product moment correlation coefficient was used to analyse convergent validity of the three scales. Spearman rank correlation was also used to analyse the test-retest reliability.

Table 1 Functional Status Measurement Tools

Scale/Items	Data Collection Procedure	Respond Format	Scoring Method (range)
FSQ BADL/3	Interview/self-report	Level of difficulty	Standardization (0-100)
FSQ IADL/7	Interview/self-report	Level of difficulty	Standardization (0-100)
FSQ FP/5	Interview/self-report	Frequency	Standardization (0-100)
FSQ FS/6	Interview/self-report	Frequency	Standardization (0-100)
FSQ FSKS/3	Interview/self-report	Level of difficulty	Standardization (0-100)
FSQ FSKIS/5	Interview/self-report	Frequency	
FSQ IT/6	Interview/self-report		
1. Work situation		1. Work option	1. 1–6
2. Days in bed		2. Days count	2. 0–30 days
3. Restricted days		3. Days count	3. 0–30 days
4. Sexual Relationship		4. Level of satisfaction	4. 1–6
5. Perception about health		5. Level of satisfaction	5. 1–6
6. Gathering with family and friends		6. Gathering frequency	6. 1–6
SPPB Balance test/3	Observation	Timing	Standardization
SPPB Speed test/1	Observation	Timing	Standardization
SPPB Chair stand/2	Observation	Timing	Standardization
PPT/9	Observation	Timing	0-4/item

Results

Table 2 shows the overall characteristics of the respondents involved in the study. The average age of respondents is 66.30 years (SD 5.71). The sample is generally in the 60-70-year age group (older adults group), dominated by female respondents, married, and domiciled in Aceh Pidie and Aceh Utara. Almost all respondents have chronic disease, which is dominated by cardiovascular disease, arthritis and diabetes mellitus. The duration of the disease is predominantly 1-5 years range and the main caregiver is their child and spouse respectively. The education of respondents is almost half as low and they do not have job to support their economy. Cognitive function mostly in low category and majority of the respondents reported that their health status was quite healthy.

Table 2 Respondent characteristics

Socio-demographic Characteristics	Total (n=401)
Age (years)	
60–74	368 (91.8%)
75–89	31 (7.7%)
>90	2 (0.5%)
Gender	
Female	231 (57.6%)
Male	170 (42.4%)
Status	
Married	220 (54.9%)
Widow/widower	126 (31.4%)
Single	46 (11.5%)
Separated	9 (2.2%)
Location	
Pidie	96 (23.9%)
Aceh Utara	96 (23.9%)
Bireun	94 (23.4%)
Aceh Besar	68 (17%)
Aceh Timur	47 (11.7%)
Having chronic illness	
Yes	377 (94%)
No	24 (6%)
Name of disease (n=377)	
Cardiovascular diseases	162 (43%)
Arthritis	138 (36.7%)
Diabetes mellitus	42 (11.1%)
Gastrointestinal disease	23 (6%)
Lung and respiration disease	8 (2%)
Others	4 (1%)
Morbidity (n=377)	
Single	262 (69.5%)
Multiple	115 (30.5%)
Illness duration (years) (n=377)	

1–5	204 (54.1%)
6–10	150 (39.8%)
11–15	18 (4.8%)
16–20	5 (1.3%)
Primary Caregiver	
Children	196 (48.9%)
Spouse	184 (45.9%)
Next of kin	19 (4.7%)
Paid caregiver	2 (0.5%)
Education	
Elementary school	180 (44.9%)
No formal education	149 (37.2%)
Junior/senior high school	50 (12.5%)
Diploma	20 (5%)
Bachelor	2 (0.5%)
Occupation	
Do not work	258 (64.3%)
Farmer	90 (22.4%)
Merchant	27 (6.7%)
Retired	21 (5.2%)
Others	5 (1.1%)
SPSMQ	
Low	175 (43.6%)
Intact	164 (40.9%)
Moderate	62 (15.5%)
Health Status	
Quite healthy	244 (60.8%)
Good	123 (30.7%)
Very healthy	25 (6.2%)
Not healthy	9 (2.2%)

Table 3 Central tendency, range and internal consistency for measuring functional status (FSQ, SPPB, and PPT)

Scale	Mean	Standard Deviation	Observed Range	% floor	% ceiling	Internal Consistency, Cronbach's α
FSQ BADL	85.56	18.35	33.33–100	3	52	0.88
FSQ IADL	43.10	19.47	0–94.44	1	1	0.82
FSQ FP	74.17	13.60	28–100	0	6	0.72
FSQ FS	49.97	14.66	0–94.44	0	1	0.53
FSQ FSKS	64.92	25.40	0–100	2	18	0.89
FSQ FSKIS	80.63	11.20	40–100	0	9	0.43

SPPB	6.93	2.62	0–12	1	1	0.80
PPT	20.43	7.27	2–34	1	0	0.91

Table 4 Correlation between scales measuring functional status

Instruments Name	FSQ BADL	FSQ IADL	FSQ FP	FSQ FS	FSQ FSKS	FSQ FSKIS	SPPB	PPT
FSQ BADL	1							
FSQ IADL	0.62**	1						
FSQ FP	0.36**	0.38**	1					
FSQ FS	0.46**	0.56**	0.45**	1				
FSQ FSKS	0.67**	0.78**	0.42**	0.60**	1			
FSQ FSKIS	0.43**	0.40**	0.38**	0.19**	0.42**	1		
SPPB	0.61**	0.72**	0.30**	0.49**	0.66**	0.20**	1	
PPT	0.74**	0.79**	0.41**	0.53**	0.79**	0.49**	0.79**	1

**Correlation significant at 0.01 levels (2-tailed)

All instruments have been confirmed and filled before the enumerators leave the study site. The mean and standard deviation of all instruments measuring functional status can be seen in table 3. There are no significant floor and ceiling effects for FSQ IADL, FSQ FS, SPBB and PPT. As for FSQ BADL, FSQ FSKS and FSQ FSKIS the effects of floor and ceiling are significant. Nunnally in the later version of his Pychometric theory book (1994) suggested α geater than 0.7 was considered to have acceptable internal consistency (Streiner, 2003). Therefore, the internal consistency of these three instruments considerd to be adequate for every subscale, especially PPT, but for FSQ FS and FSQ FSKIS internal consistency is lower than other subscale.

Correlation between scales can be seen in table 4. The highest correlation is at the value of r = 0.79 is in the correlation between PPT with FSQ IADL, PPT with FSQ with FSKS and PPT with SPPB. The low correlation is at the value of r = 0.19 that is the correlation between FSQ FSKIS with FSQ FS. The correlation between SPPB and PPT is the highest and both instruments are equally measuring the functional status of the older adults by means of observation.

Discussion

The main research objective of this research is to determine which of these three instruments (FSQ, SPPB, and PPT) can be used to measure functional status of older adults population in Indonesia which one is most appropriate. To determine the suitability of course one of the basic thing to do is to determine the reliability and validity of the instruments. We found in studies conducted on older adults people living in the community that almost all instruments have the potential to be used as a standard instrument to measure functional status of older adults living in the community, especially SPPB and PPT. both are internally consistent with Cronbach's α 0.80 and 0.91 and both also do not experience floor and ceiling effects and have good construct validity.

The second research objective was to compare the validity and reliability of the three instruments; this was obtained by looking at the correlation between the instruments. Two observation instruments have a high correlation with each other (r = 0.79) both are well correlated to the self-reported instrument that can either be filled by the respondent themself or through a guided interview. PPT particularly has a fairly high correlation value with FSQ (r = 0.41 - 0.

79) compared to SPBB with FSQ (r = 0.20 - 0.72). These results indicate that SPPB and PPT are potentially useful as screening tool at the primary care level.

FSQ consists of several subscales within it scale, in contrast to other instruments in this study FSQ does not use sum scores for all items in its instrument, but uses sum for each subscale. Therefore, it can be concluded why for some subscales the correlation was very low especially subscales other than FSQ BADL and FSQ IADL. Several studies only use these two subscales in evaluating functional status (Reuben, Valle, Hays, & Siu, 1995; Sherman & Reuben, 1998). But for this study researchers decided to include the entire subscale and items. This was done so that all components in the instrument can be seen whether it is suitable for Indonesian older adults. After going through the process of translation, data collection and analysis, FSQ proved to have many weaknesses. In the translation process there were no grammatical errors nor significant differences from the original. However, enumorators reported that they had difficulty when asking one question related to the older adult sexual activities. Therefore, this particular questions "during the past month, how satisfied are you with your sexual relationship? Was changed to "during the past month, are you still sleeping in the same room with your husband?". Surely this option is was not the best one, but to increase response rate and interest of respondents this is the most possible solution. Further research maybe needed to assess FSQ cultural context. Cronbach's α for the overall subscale in FSQ is quite good, especially FSQ BADL (0.88) and FSQ IADL (0.82), but Cronbach's α for FSQ FS and FSQ FSKIS are very low 0.53 and 0.43. The highest inter-subscale correlation in FSQ is between FSQ IADL and FSQ FSKS (r = 0.78) and the lowest correlation is between FSQ FS and FSQ FSKIS (r = 0.19). Although the reliability and correlation of FSQ is lower than SPPB and PTT but there are some advantages of FSQ among others objective instruments, it was the existence of subscales which inquire about psychological and social aspects affecting functional status of older adults.

SPPB and PPT in term of their validity and reliability are in better quality than FSQ especially PPT with the highest value of Cronbach's α at 0.91. Both the translation and data analysis of this instrument do not experience significant problems. But the problem is during data collection mainly for PPT. One of the tasks in PPT relates to the ability of the older adults to write, it is certainly difficult to do if the older adults are illiterate. Then evaluation related to the use of stairs. Not all houses have stairs so it will be difficult to assess the older adult's ability to climb up and down stairs. The solution to this problem was to use the 7 items of questions rather than 9. For this study researchers wanted all items to be evaluated. Therefore, for the older adults who do not have stairs data collection was conducted at the village activity centre. SPPB on the other hand has almost no significant constraints from the process of translation to the data analysis. Based on the preferences asked to the older adults they also prefer SPPB compared to other instruments. Enumerators also report the same thing that SPPB is the easiest to use.

To answer the research question about which instrument is most suitable for the Indonesian context, we are recommending SPPB based on our data. SPPB does not require any modification at all and also easy to administer.

Conclusion

The findings of this study is expected to support the validity and reliabilty of all three instrument for functional status assessment in Indonesian older adults, and SPPB appear to be the best among the other instruments to use in the nursing practice followed by PPT and FSQ.

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Measuring Work Fatigue on Nurses: A Comparison between Indonesian Version of Fatigue Assessment Scale (Fas) and Japanese Industrial Fatigue Ressearch Commite (Jifrc) Fatigue Questionnaire

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Abstract

A Nursing is one type of jobs that is at risk of experiencing fatigue because its workload is quite high. Fatigue Assessment Scale (FAS) and Japanese Industrial Fatigue Research Committee (JIFRC) fatigue questionnaire are two instruments that are often used to measure work fatigue in various types of work because the ease of use. This study aims to test and compare the validity and reliability of the Indonesian version of FAS and JIFRC among nurses in one governmental hospital in East Kalimantan Indonesia. The study was conducted on 170 nurses in one of the Class A Referral Government Hospitals in East Kalimantan. Determination of the study sample using stratification simple random sampling method, the FAS questionnaire obtained from Zuraida & Chie, the JIFRC questionnaire was taken from Tarwaka, the Validity and Reliability test using Pearson Product Moment and Cronbach's alpha. The JIFRC in Indonesian version has a satisfactory psychometric property with adequate validity and reliability to assess work fatigue in nursing profession. The best Cronbach alpha (0.921) will be obtained if item number 3 and 16 are corrected for the editorial/sentence arrangement

Keywords: Fatigue assessment scale, japan industrial fatigue research committee, nurses, reliability, work fatigue, validity.

Introduction

Work fatigue is still an occupational health problem that needs attention from health and safety managers because it can have a detrimental impact on individuals and organizations. In general, work fatigue is a physical and psychological phenomenon that is defined as a condition of weakness, dislike and reluctance to continue current activities, not interested in doing further work, a decrease in alertness, a decrease in physical and emotional capacity, and a decreased ability to do certain jobs (Thiffault & Bergeron, 2003). Fatigue experienced is basically a cumulative process and is indicated by a decrease in the ability to carry out tasks and a decrease in attention to stimuli from the environment. People who experience work fatigue also generally experience changes in motivation to complete their work (De Vries, Michielsen, & Van Heck, 2003).

Work fatigue has an impact on biological balance, psychological and cognitive processes. At the individual level, work fatigue has a detrimental effect because it can reduce concentration and thinking power, decrease physical capacity, excessive dependence on others, become easily forgotten, have difficulty perceiving and respond to dangerous situations, communication difficulties and a decrease in the quality of personal life. While from the aspect of the organization, work fatigue experienced by its personnel will have an impact on decreasing the quality of service to consumers, increasing the number of turn-over and decreasing work productivity (Bao & Taliaferro, 2015; Blouin et al, 2016; Drake & Steege, 2016; Graves & Simmons, 2009).

Nursing is one type of profession that is at risk of experiencing fatigue. This is because the main workload factor is high, as well as additional workloads such as having to operate a variety of high-tech medical and care equipment, must be responsible for the diagnosis and monitoring of patients with complications and emergency problems. The roles and responsibilities carried out by nurses on work, family and social life have caused nurses too often experience work fatigue as an accumulation of sleep disorders, lack of rest periods, physical and psychological stress and emotional changes. (Barker & Nussbaum, 2011; Bjorvatn et al, 2012; Korompeli et al, 2013; Samaha et al, 2007).

From the aspect of social relations, work fatigue that is not addressed will have an impact, among others, the deterioration of the relationship between nurse-patient, nurse-family, and other nurses. While from the aspect of work, work fatigue experienced by nurses can cause an increase in errors in nursing care, errors in carrying out doctor's advice, wrong decision making, and errors in monitoring and observing patients. All the effects of work fatigue will ultimately reduce the quality of service and patient safety (Carney, 2013; Drake & Steege, 2016; Graves & Simmons, 2009; Rahman et al, 2017; Scott et al, 2014; Steege et al, 2017).

According to Akerstedt & Gillberg (1990), work fatigue can be measured subjectively and objectively, but there is no standard measuring tool to measure work fatigue. Some commonly used measuring instruments include subjective measurements based on questionnaires, psychomotor tests based on reaction time and concentration, measurement of ocular parameters and physiological measurements (Sibsambhu, Mayank, & Aurobinda, 2010). Questionnaire-based subjective fatigue measurement is a measuring instrument that is quite widely used for reasons of practicality and measurement results can be obtained quickly. For the purposes of measuring work fatigue, there are a number of commonly used questionnaires including The brief fatigue inventory (BFI), Fatigue severity scale (FSS), Global vigor and affect (GVA), May and Kline adjective checklist, Pearson-Byars fatigue feeling checklist, Rhoten fatigue scale, Schedule of fatigue and anergia, Checklist individual strength (CIS), Fatigue assessment instrument (FAI), Fatigue impact scale (FIS), Fatigue rating scale (FRS), Fatigue assesment scale (FAS), Fatigue questionnaire, Fatigue severity inventory, Fatigue symptom inventory (FSI), Fisk fatigue severity score, Lee fatigue scale (LFS), Piper fatigue scale (PFS) and visual analogue scale for fatigue (Dittner, Wessely, & Brown, 2004), and fatigue scale from Japanese industrial fatigue research commite (JIFRC) (Saito, 1999).

Of the various fatigue scales, FAS and JIFRC are two questionnaires that are often used by researchers to measure work fatigue in various types of work and conditions. In accordance with the conclusion of Hendriks et al. (2018), FAS is a questionnaire that is often used to measure fatigue in various conditions and diseases (26 different condition and disease) in 19 countries and 12 languages. Meanwhile, JIFRC is a fatigue scale with a wide use and has been used to examine work fatigue in various jobs (Sunarno et al, 2017; Susihono et al., 2016; Konisi et al, 1991).

Fatigue Assessment Scale (FAS) is a work fatigue questionnaire developed by Michielsen et al. (2004), that contains 10 items of questions to reveal subjective work fatigue in the form of reflection of physical and mental work fatigue and its implications for motivation in carrying out activities. The FAS questionnaire was stated to have high reliability for measuring fatigue among workers (De Vries, Van der Steeg, & Roukema, 2010). Whereas JIFRC fatigue scale is a work fatigue questionnaire compiled by the Japan industrial fatigue research committee (Saito, 1999; Sudo & Ohtsuka, 2002). This questionnaire consists of 30 items of questions, generally divided into three parts (fatigue assessment related to weakening physical activity, fatigue associated with weakening motivation and fatigue associated with physical complaints) (Adiatmika, 2009; Susihono et al., 2016). FAS and JIFRC are quite widely used to assess work fatigue in various types of work because of practicality, do not need special skills to apply it, and respondents do not need much time to fill it, however scientific evidence that shows both of these measures is valid and reliable to assess work fatigue among nurses still in Indonesia still limited.

The quality of research is not only determined by the researcher's accuracy and research results, but also by the quality of the questionnaire used. In quantitative research, the quality of the measuring instrument used is achieved through measuring the validity and reliability of the questionnaire (Heale & Twycross, 2015). Validity is to measure what is intended to be measured, reliability concerns the extent to which a measurement of a phenomenon provides stable and consist result (Taherdoost, 2016). This study aims to test the validity and reliability of the Indonesian version of FAS and JIFRC fatigue scale on nurses.

Method

Research methods and samples

The cross-sectional study was conducted on 170 samples of nurses in one of the Class A Referral Governmental Hospitals in East Kalimantan from May to July 2018. Determination of the sample study was carried out by stratificatied simple random sampling, taken from all private hospitalization rooms (Sakura and Teratai), public inpatient installations (Edelwise, Anggrek, Cempaka, Melati, Mawar, Cempaka, Aster, Flamboyan, Bougenvile, Seruni, Angsoka and Dahlia) and emergency room (ER).

Instruments

The Indonesian edition of the FAS questionnaire was taken from Zuraida & Chie (2014), This questionnaire contains 10 questions to reveal the general feeling of work fatigue in the past year. The Indonesian edition of FAS uses five Likert scales with answer options consisting of: (1) never, (2) sometimes, (3) being felt regularly, (4) often experienced, (5) always experienced. The item questions in FAS consist of 1) I am bothered by fatigue, 2) I get tired very quickly, 3) I don't do much during the day, 4) I have enough energy for everyday life, 5) Physically I feel exhausted, 6) I have problems to start things, 7) I have problems to think clearly, 8) I feel no desire to do anything, 9) Mentally I feel exhausted, 10) When I am doing something I can concentrate quite well. Total scores obtained by summing all scores per item, then categorized into 2 (scores 1-30 = "low" work fatigue) and (score 31-60 = "high" work fatigue)

The Indonesian edition of the JIFRC questionnaire was taken from Tarwaka (2010), This questionnaire consists of 30 question items. In general, this questionnaire consisted of 3 parts, the first ten questions revealed "drowsiness and dullness", the second ten questions revealed "difficulty in concentration" and the third ten questions reveal "projection of physical disintegration",

same as the FAS questionnaire, in this study the Indonesian version of IFRC questionnaire used five Likert scales with the answer options consisting of: (1) never, (2) sometimes, (3) being felt regularly, (4) often experienced, (5) always experienced. Total scores obtained by summing all scores per item, then categorized into 4: 1) scores 30–52="low" work fatigue; 2) scores 53–75="medium" work fatigue; 3) scores 76–98="high" work fatigue; 4) scores 99–120="very high" work fatigue.

Statistical Analyses

Data were analyzed by the Statistical Package for the Social Sciences (SPSS ver. 21, Chicago, IL, USA), in order to describe mean, standard deviation (SD) and percentage frequency. The minimum, maximum and variance were also reported for each item of the questionnaire.

Validity and Reliability

Pearson Product Moment Correlation was used to evaluate the construct validity of each item to the total score. FAS and JIFRC test correlations were considered as 'good to excellent' when $r \geq 0.75$, as 'good' when r ranged between 0.5 and 0.7, as 'fair' when r ranged between 0.25 and 0.50, and as 'little or no relationship' when r was less than 0.25 (Kline, 2000; Portney & Watkins, 2009).

Cronbach's alpha scores were used to assess the internal consistency reliability of FAS and JIFRC questionnaire. A value between .70 and .79 is considered 'fair', a value between .80 and .89 considered 'good', and a value .90 and above considered 'excellent' (Cicchetti,1994; Nunnally & Bernstein, 1994; Michalopoulos et al., 2015).

Ethical issue

This study was reviewed and approved by the Ethical Commission of Health and Medical Research of Mulawarman University (Indonesia) Faculty of Medicine, which refers to The International Ethical Guidelines for Biomedical Research Involving Human Subjects and the international ethical guidelines for epidemiological studies from the Council for International Organisations of Medical Sciences (CIOMS 2016). Informed written consent was obtained from participants prior to their participation. The informed consent form stated the purpose of the study, data confidentiality terms and their voluntary right of participation in the study, as well as providing a guarantee that no participant would suffer any harm as a result of his or her participation in the study.

Results

Samples characteristics

The majority of respondents in this study were >25–29 years old (27.6%), the majority of gender was female (74.7%), the majority of marital status were married (79.4%), education level is mostly Diploma III in Nursing, most of the working experience is more than 5 years (50.6%) and employment status is mostly contract nurses (72.4%) (table 1).

Table 1 Personal Characteristics of Samples (n=170)

Variable	Number	(%)
Age (years)		
21–25	34	19.4
> 25–29	47	27.6
> 29–33	35	20.0
> 33–37	12	6.9
> 37–41	13	7.4
> 41	29	16.6
Gender		
Male	43	25.3
Female	127	74.7
Marital Status		

Not Married	35	20.0
Married	135	79.4
Education Background		
Strata 1 in Nursing	38	21.7
Diploma IV in Nursing	14	8.2
Diploma III in Nursing	118	69.4
Working Period		
1–5 years	84	49.4
> 5 years	86	50.6
Employee Status		
Permanent	47	26.9
Contract	123	72.4

Table 2 Descriptive Characteristics And The Pearson Correlation (R) Of Each Data For Internal Consistency of Fatigue Assesment Scale (FAS) (n=170)

Item	Mean	SD	Variance	(r)	P Value	Corrected item/total correlation	Cronbach's alpha if item deleted
Item 1 (bothered by fatigue)	2.30	0.67	0.46	0.511	0.000	0.354	0.695
Item 2 (get tired very quickly)	2.18	0.63	0.40	0.511	0.000	0.366	0.694
Item 3 (don't do much during the day)	1.95	0.67	0.45	0.436	0.000	0.269	0.709
Item 4 (have enough energy for everyday life)	2.78	0.64	0.42	0.113	1.144	-0.065	0.755
Item 5 (physically feel exhausted)	2.30	0.72	0.52	0.607	0.000	0.458	0.677
Item 6 (problems to start things)	1.74	0.72	0.52	0.642	0.000	0.501	0.669
Item 7 (problems to think clearly)	1.75	0.61	0.37	0.608	0.000	0.485	0.676
Item 8 (no desire to do anything)	1.88	0.65	0.43	0.746	0.000	0.648	0.647
Item 9 (Mentally feel exhausted)	1.86	0.74	0.55	0.758	0.000	0.648	0.713
Item 10 (can concentrate quite well)	2.60	0.80	0.64	0.366	0.000	0.156	0.727
Total Score	21.38	3.66	13.42	1		1.000	0.834

Table 3 Descriptive Characteristics And The Pearson Correlation (R) Of Each Data For Internal Consistency of Japan Industrial Fatigue Research Committee (J-IFRC) (n=170)

Item	Mean	SD	Variance	(r)	P Value	Corrected item/total correlation	Cronbach's alpha if item deleted

Item 1 (The head feels heavy)	2.35	0.73	0.53	0.442	0.000	0.388	0.920
Item 2 (Feel tired all over the body)	2.72	0.80	0.64	0.562	0.000	0.511	0.918
Item 3 (Feet feels heavy)	2.54	0.93	0.86	0.479	0.000	0.412	0.921
Item 4 (Frequency of yawning)	2.55	0.68	0.46	0.457	0.000	0.408	0.920
Item 5 (Distracted mind)	2.05	0.59	0.35	0.621	0.000	0.587	0.917
Item 6 (Sleepy)	2.44	0.65	0.42	0.496	0.000	0.451	0.919
Item 7 (Eyes feel heavy)	2.28	0.78	0.61	0.525	0.000	0.472	0.919
Item 8 (Rigid and awkward to move)	1.65	0.58	0.33	0.492	0.000	0.452	0.919
Item 9 (Feeling like to lie down)	1.74	0.56	0.32	0.538	0.000	0.501	0.919
Item 10 (Feeling difficult to think)	2.54	0.77	0.60	0.612	0.000	0.566	0.918
Item 11 (Tired of talking)	2.02	0.60	0.36	0.698	0.000	0.669	0.916
Item 12 (Feeling nervous)	1.79	0.72	0.52	0.643	0.000	0.603	0.917
Item 13 (It's hard to concentrate)	1.82	0.76	0.58	0.608	0.000	0.563	0.918
Item 14 (It's hard to focus)	1.88	0.43	0.19	0.607	0.000	0.582	0.918
Item 15 (Tend to forget)	1.87	0.51	0.26	0.615	0.000	0.585	0.918
Item 16 (Lack of trust)	2.17	0.66	0.43	0.402	0.000	0.352	0.921
Item 17 (Anxious about something)	1.89	0.69	0.47	0.476	0.000	0.427	0.920
Item 18 (Cannot control attitude)	2.29	0.65	0.43	0.594	0.000	0.555	0.918
Item 19 (Can not be diligent in work)	1.82	0.61	0.38	0.488	0.000	0.445	0.919
Item 20 (Headache)	1.78	0.66	0.43	0.592	0.000	0.553	0.918
Item 21 (Shoulder feels stiff)	2.29	0.65	0.43	0.583	0.000	0.543	0.918
Item 22 (Feeling pain in the back)	2.25	0.72	0.53	0.609	0.000	0.566	0.918
Item 23 (Shortness of breath / difficult to breathe)	2.38	0.78	0.61	0.589	0.000	0.541	0.918
Item 24 (Feeling thirsty)	1.72	0.71	0.51	0.583	0.000	0.539	0.918
Item 25 (Hoarseness)	2.88	0.84	0.70	0.460	0.000	0.398	0.920
Item 26 (Feeling dizzy/dizzy)	1.72	0.73	0.53	0.547	0.000	0.499	0.919

Item 27 (Feeling dizzy /dizzy)	2.10	0.66	0.44	0.612	0.000	0.573	0.917
Item 28 (The eyelids feel heavy)	1.72	0.69	0.47	0.536	0.000	0.491	0.919
Item 29 (Trembling in certain parts of the body)	1.58	0.58	0.34	0.654	0.000	0.623	0.917
Item 30 (Feeling unwell)	2.00	0.57	0.33	0.695	0.000	0.668	0.917
Total score	62.81	11.37	129.32	1		1.000	0.834

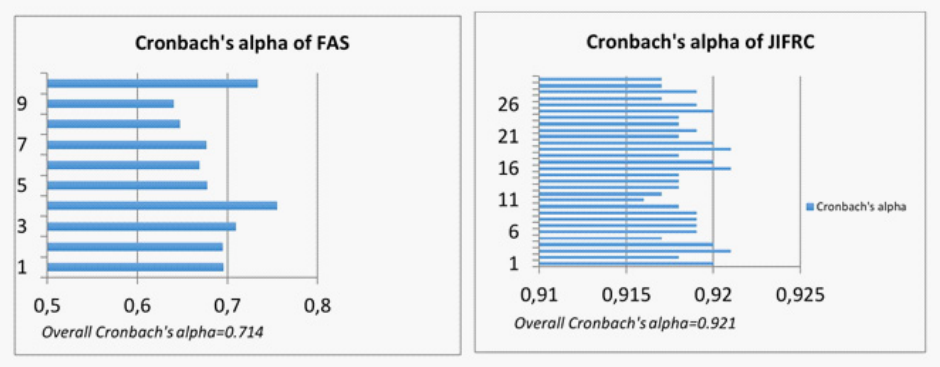

Figure 1 Reliability test result of FAS and JIFRC

Results of the questionnaire validity test

The mean of the total FAS score was 21.38 (± 3.66), its mean in this study the average nurse experienced work fatigue in the "low" category.The 4th item on "I have enough energy for everyday life" showed the highest score (2.78, ± 0.64), whereas the 6th item on "I have problems to start things" had the lowest score (1.74 ± 0.72). The largest variance was also observed in item 10th on "When I am doing something I can concentrate quite well" (0.64, ± 0.80) and smallest variance observed in item 7th on "I have problems to think clearly" (0.37, ± 0.61). The smallest Pearson correlation value is 0.113 (item number 4 on "I have enough energy for everyday life"), and the largest Pearson correlation is 0.758 (item number 9 on "Mentally I feel exhausted"). Based on the previous criteria, it can be concluded that the item number 1, 2, 5, 6, 7, 8, 9 declared are "good" or in this study called as a valid because Pearson correlation (r) ranged between 0.5 and 0.7. The item number 3, 4, and 10 declared are little/fair or in this study called as an invalid because Pearson correlation (r) ranged between <0.25 to 0.5. (Table 2).

The mean of the total JIFRC score was 62.81 (± 11.37), its mean in this study the average nurse experienced work fatigue in the "medium" category. The 25th item on "feeling thirsty" showed the highest score (2.88, ± 0.84), whereas the 29th item on "trembling in certain parts of the body" had the lowest score (1.58 ± 0.58). The largest variance was also observed in item 3rd on "feet feel heavy" (0.86, ± 0.93) and smallest variance observed in item 14th on "it's hard to concentrate" (0.19, ± 0.43). The smallest Pearson correlation value is 0.40 (item number 16 on "tend to forget"), and the largest Pearson correlation is 0.698 (item number 11 on "feeling difficult to think"). Based on the previous criteria, it can be concluded that the item number 2, 5, 7, 9, 10, 11, 12, 13, 14, 15, 18, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30 declared are "good" or in this study called as a valid because Pearson correlation (r) ranged between 0.5 and 0.7. The item number 1, 3, 4, 6, 8, 16, 17 and 19 declared are fair or in this study called as an invalid because Pearson correlation (r) ranged between 0.25 to 0.5. (Table 3).

Results of the questionnaire reliability test

As shown in table 2 and figure 1, If item question number 10 "When I am doing something I can concentrate quite well" is deleted this can increase Cronbach's alpha coefficient by 0.727, If item question number 3 "I don't do much during the day" is deleted this can increase Cronbach's alpha coefficient by 0.709 and if item question number 4 "I have enough energy for everyday life" is deleted this can increase Cronbach's alpha coefficient by 0.755. But in general, the combination of all 10 items of FAS has shown the fair reliability with Cronbach's alpha coefficient of 0,714. This result generally shows the Indonesian version of FAS is reliable to measure work fatigue in nurses. To get the highest reliability index from this questionnaire, it is recommended to delete or correct question number 4 (have enough energy for everyday life).

Based on table 3 and figure 1, If item question number 1, 4 and 17 are deleted this can increase Cronbach's alpha coefficient by 0.920, If item question number 3 and 16 are deleted this can increase Cronbach's alpha coefficient by 0.921 and if item question number 6, 8, 19 are deleted this can increase Cronbach's alpha coefficient by 0.919. But in general, the combination of all 30 items of JIFRC has shown the excellent reliability with Cronbach's alpha coefficient of 0.921. This result generally shows the Indonesian version of JIFRC is reliable to measure work fatigue in nurses.

Based on the comparison of Cronbach alpha values from FAS (0.714) and JIFRC (0.921), it can be concluded that JIFRC is a more reliable work fatigue scale for measuring work fatigue in nurses, even though the Pearson correlation from both questionnaires is the same which ranges from 0.25–0.5.

Discussion

To achieve the accuracy of the results of the study, the measuring instrument (questionnaire) used must be valid and reliable. Validity is to measure what is intended to be measured, explains how well the collected data covers the actual area of investigation and expresses the degree to which a measurement measures what it purports to measure. Reliability concerns the extent to which a measurement of a phenomenon provides stable and consist result, and also the degree to which the results obtained by a measurement and procedure can be replicated (Taherdoost, 2016; Bolarinwa, 2015).

The most appropriate method to assess the reliability of the questionnaire is Cronbach's alpha reliability coefficient, which has been frequently used to assess the internal consistency of Likert-type scales. If the items in a scale are equally weighted and independent, high correlation coefficients are expected to between each item and the total score (Aydin Özkan, Karaca, & İster, 2017). Internal consistency describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter-relatedness of the items within the test. Internal consistency should be determined before a test can be employed for research or examination purposes to ensure validity (Tavakol & Dennick, 2011).

Based on the comparison of the values of Cronbach alpha reliability test and Pearson correlation validity test, compared with the FAS, the JIFRC has proven the validity and reliability values higher, this instrument is more recommended for measuring work fatigue for nurses. Although overall the JIFRC questionnaire is good at measuring work fatigue for nurses, to further improve its validity and reliability it is recommended to improve grammar on items number 1, 3, 4, 6, 8, 16, and 19, so that Pearson correlation coefficients are obtained more from 0.5.

The results of this study are different from Fang, Katz, and Alberto, (2015) which proves that FAS is valid and reliable to measure work fatigue in construction in New England, research to measure work fatigue in nurses in Western North Carolina, and result of Cano-Climent, et al. (2017) which proves FAS valid and reliable for measuring feelings of fatigue in postpartum women at Spanish.

Conclusion

The study demonstrates that the Indonesian version of JIFRC fulfills the criteria of a reliable and valid assessment tool to rate the work fatigue among nurses, although there are eight question items that still need to be fixed. The high internal consistency and construct validity support the application of the JIFRC as an easy administered tool to assess work fatigue among nurses in Indonesian healthcare settings. The author is very grateful to all nurses who participated in this study, the hospital management who allowed this research and the enumerators. The author declares no conflict of interest.

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Improving Student Nurses' Clinical-Reasoning Skills: Implementation of a Contextualised, Guided Learning Experience

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Abstract

Well-developed clinical reasoning skills are central to the process of clinical judgement. However, the results of recent studies suggest that curricula and teaching approaches that support student nurses' development of clinical reasoning skills have not yet been fully achieved. Cognitive apprenticeship offers a new approach to facilitate the development of complex thinking skills, for example, reasoning skills in making clinical decisions. This study examined the effect of an educational intervention utilizing principles of cognitive apprenticeship on students' ability to apply clinical reasoning skills within the context of a purpose-built clinical vignette. A quasi-experimental, non-equivalent control-group design was used to evaluate the effect of the educational intervention on students' accuracy, inaccuracy and self-confidence in clinical reasoning. Eighty-five undergraduate nursing students participated in the study. A purpose-built clinical vignette was utilised to collect data from study participants. Mixed-Design ANOVA with a significant level of $p< 0.05$ was employed. Both quantitative and qualitative data were collected. A statistically significant increase in students' accuracy in clinical reasoning was found after the six-weeks educational intervention. Examination of the quantitative data at time 2 discovered a statistically significant higher accuracy in clinical reasoning score ($p<0.00$) of the intervention group as compared to the control group. Results from inaccuracy and self-confidence in clinical reasoning did not reach significance. Results from the qualitative data are reported separately. It is argued that interplay of small group discussion of domain specific case-scenarios and the provision of guided learning experience may play a role in achieving partially successful results. This study makes an important contribution to nursing education by providing evidence to understand how best to facilitate nursing students' development of clinical reasoning.

Keywords: Clinical judgement, clinical reasoning, cognitive apprenticeship, educational intervention, nursing education.

Introduction

The development of clinical judgement and quality nursing graduates who can meet the demands of complex health settings remain an educational challenge. Developing nurses' clinical-reasoning skills is likely to contribute positively to the quality of clinical judgment in clinical practice (Alfaro-LeFevre, 2017, Johnsen, Slettebø, Fossum, 2016; Sar., Fitri, & Widianti, 2017). Wosinski, Belcher, Dürrenberger, Allin, Stormacq & Gerson, 2018). However, Tanner (2010) in an action-oriented plan for the future development of the nursing profession argue that nurses in the United States of America entering the field are not equipped with essential knowledge and clinical-reasoning skills for current practice, nor are they prepared to continue learning to meet the challenges of the nursing profession in the future. Similarly, Benner, Sutphen, Leonard, Day & Shulman (2010) found that the nursing students in their study were poorly prepared to meet the current challenges of the healthcare sector, which led to their inability to cope with contemporary practice. Therefore, they argue that if clinical judgment is to be improved, nursing teachers need to focus on developing student nurses' clinical-reasoning skills by improving the pedagogical basis of educational interventions in this area.

Contemporary educational research highlights the importance of students' active engagement in learning, particularly in relation to the development of complex thinking skills, for example, reasoning skills in making clinical decisions. However, in a systemic review of the effectiveness and efficacy of educational interventions on clinical judgment, Thompson and Stapley (2011) found that results were unclear and the means to achieve positive effects are not yet known. For example, some current studies investigating the effect of Problem-Based Learning (PBL) showed that some issues are still prominent including students' familiarity and teachers' capability to conduct PBL (Wosinski et al., 2017; Gholami, Moghadam, Mohammadipoor, Tarahi, Sak, Toulabi, & Pour, 2016; Mutiara, Suryani, Ikeu, 2017). This raises important questions about teaching approaches that might achieve better outcomes. Cognitive apprenticeship offers the opportunity to develop a novel educational approach to the development of clinical-reasoning skills within the undergraduate nursing context. Collins, Brown, and Newman (1989) defined cognitive apprenticeship as a 'learning-through-guided-experience' (p. 456) which focusses on the development of cognitive and metacognitive skills for solving complex problems. According to Collins, Brown, and Newman (1989), the focus on expert processes and situated learning within a collaborative environment enables students to build conceptual models of complex target skills and, thus, 'encourages both a deeper understanding of the meaning of the concepts themselves and a rich web of memorable associations between important concepts and problem-solving contexts' (p.3). Teaching students through cognitive apprenticeship enables making tacit processes visible to learners so that they can observe and practice them (Collins, Brown, & Holum, 1991). These characteristics highlight the potential of cognitive apprenticeship as an innovative educational approach for facilitating the development and application of clinical-reasoning skills. Hence, this study aimed to examine the effect of an innovative teaching approach facilitating active engagement in clinical reasoning within the context of high-risk pregnancy on the learning experience of undergraduate nursing students at a university in North Sulawesi Province, Indonesia. This study makes an important contribution to nursing education by providing evidence to understand how best to facilitate nursing students' development of clinical reasoning.

Cognitive apprenticeship has been used in learning situations that involve interpretation and judgement in diverse fields such as nursing, medicine, science and teacher education (Maher, Gilmore, Feldon & Davis, 2013; Wu, Hwang, Su & Huang, 2012; Zurmehly, Lynd & Leadingham, 2011) and has been growing in respect and popularity during the 2000s due to its emphasis on social-constructivist methods of supporting development of cognitive skills and metacognitive skills.

Drawing on the work of Facione (2010) and Collins, Brown and Newman (1989), the educational intervention for this study was designed to provide explicit, well-designed

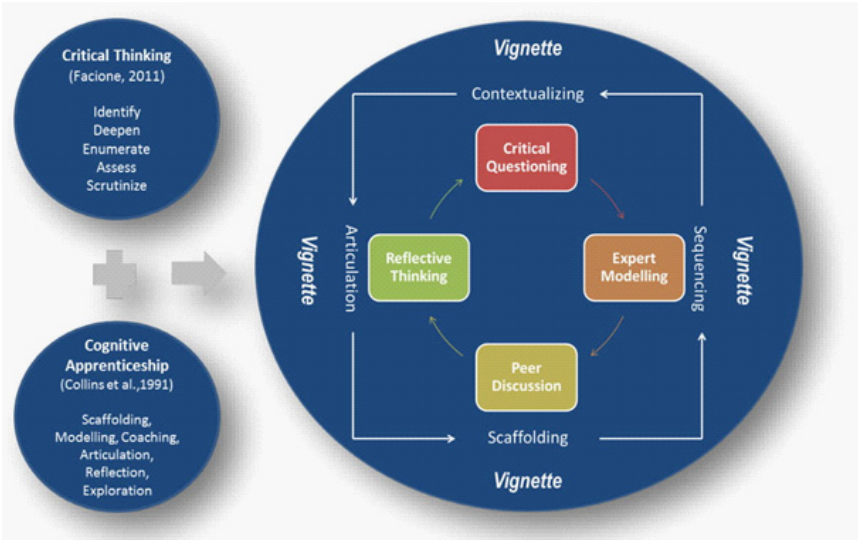

Figure 1 Clinical reasoning: a contextualised, guided learning experience Model (Yauri, 2015)

educational support to assist student nurses with the development of clinical-reasoning skills and their application in clinical-practice situations. The educational intervention package consists of two books: Teacher's guide and Students' workbook. As presented in Figure 1, the model for the educational intervention features four key teaching/ learning strategies (critical questioning, expert modelling, peer discussion and reflective thinking), which are complemented by four learning-enhancement strategies (contextualisation, sequencing, scaffolding and articulation). These strategies are described in the following section.

Key teaching/learning strategies.

Critical questioning.

The critical-questioning strategy can be described as a strategy designed to facilitate purposeful questions that target the development of clinical-reasoning skills (Merisier S., Larue C., Boyer L, 2018). Within the context of the vignette developed for this study, critical questions were developed to help students in the high-risk-pregnancy nursing context undertake further patient-data collection; decide whether high-risk-pregnancy problem/s existed; prioritise identified problems; select the most relevant and feasible intervention/s based on a process of decision making; and reflect on the effectiveness of the decision made. Five critical questions included are 1) what are the facts?; 2) what are the key problems?; 3) what possible intervention can be done?; 4) what are the relevant and feasible interventions?; 5) how good was my thinking?

Expert modelling.

The expert-modelling strategy involved the demonstration of clinical-reasoning skills application by the expert (i.e. the teacher) to provide a 'real-life' model that would help students observe, conceptualise and develop a conceptual model of the processes important to accomplishing abstract skills that are largely 'hidden' from students' direct view (Herrington et al., 2010., Johnsen., Slettebø., Fossum, 2016). Expert modelling was employed in the educational intervention in this study using the 'think-aloud' approach, which is a process that involves the teacher verbalising their thinking. This approach includes the discussion of the assumptions, relevant evidence and the logic of the thinking process when solving problems.

Peer discussion.

The peer-discussion strategy focuses on the learner sharing ideas with other learners. Collins et al. (1989) believe that the presence of other learners provides learners with 'calibrations for their own progress, helping them to identify strengths and weaknesses and thus focus their efforts on improvement' (p. 486). Consequently, peer discussion was implemented as part of the key teaching/

learning strategies in this study to allow students to share their thinking with the group and reflect on others' experiences (Chang, Chang, Kuo, Yang & Chou, 2011; Wiggs, 2011). This study considered that learning through peer discussion would provide students with multiple roles and perspectives and assist the development of students' clinical-reasoning skills to solve clinical problems.

Reflective thinking.

As a form of metacognition, reflective thinking is the deliberate monitoring and correction of the one's cognitive strategies (Facione, 2011; Lai, 2011). When reflecting on experiences, students are able to identify both positive and negative experiences and construct a conceptual framework from their experiences. Studies have found that facilitating learning using reflective thinking enhances clinical reasoning (Kuiper et al., 2010; Facione, 2011). To stimulate students' reflective thinking, this study provided guiding reflective questions to the students after they completed each learning activity.

Enhancement strategies.

To operationalise the key teaching/ learning strategies, the learning strategies were complemented by four enhancement strategies that provided practical support for the delivery of the learning activities. The strategies are as follows.

Contextualising.

Contextualising learning instruction assists students to construct new meanings of concepts. Collins et al. (1991) argue that contextualising learning must represent the real world of practice. More importantly, must involve situations that would normally involve the knowledge being taught (Perin, 2011). In the educational intervention applied in this study, the contextualisation strategy framed learning activities based on the intended learning objectives within the context of high-risk-pregnancy nursing. Students were guided to build on their existing nursing knowledge and skills and develop new conceptual knowledge and clinical-reasoning skills relevant to high-risk-pregnancy care. Five clinical-reasoning questions were used to contextualised the learning activities.

Sequencing.

Sequencing learning instruction refers to a strategy used by the teacher to organise diversity and complexity of the learning content. In this study, students were assisted to work through three clinical vignettes that are structured with incremental levels of complexity: a simple clinical vignette, a more complex clinical vignette and a complex clinical vignette. This strategy aims to assist students to build a deeper and wider conceptual foundation of the learnt subject. By sequencing the learning activities, students obtain a general picture and comprehensive understanding of the tasks (Pritchard & Woollard, 2010).

Scaffolding.

The scaffolding strategies in this study were informed by the concept of ZPD, which was originally designed to assist children to do something that could not be done without assistance (Herrington et al., 2010; Handwerker, 2012). The teacher should be able to identify the needs of the students and deliver relevant scaffolding strategies. In this study, scaffolding was performed in several ways. First, the teacher was located in the learning environment and actively listened to the peer discussion. Second, during the peer discussion, the teacher gave students hints to think about, for example, the teacher might prompt students to think about factors that were missing in the patient's clinical information or had not been fully considered by the student.

Articulation.

The articulation strategy involved facilitating students to express their ideas in the group. Being able to articulate reason in a logical and coherent manner indicates the use of the cognitive skills essential for reasoning (Facione, 2011). In the educational intervention implemented in this study, the students were prompted with questions that were designed to facilitate discussion about contradictions, inconsistencies, strong/weak points in students' thinking or to motivate the students to challenge each other's reasoning.

Method

The study was undertaken in two phases. Phase 1 was the development and content validation of an educational-intervention package. Phase 2 implemented the finalised educational intervention and evaluated with a cohort of Indonesian undergraduate nurses. A quasi-experimental, non-equivalent control-group design was used to examine the impact of the developed educational intervention on students' accuracy, inaccuracy and self-confidence in clinical reasoning. Implementation of the educational intervention occurred in the Faculty of Nursing at Catholic University of De La Salle Manado. Using survey questionnaire, Pre-test data (Time 1) and post-test data (Time 2) were collected. Following the educational intervention, focus-group discussions were also conducted to explore the perceptions of intervention and control group participants regarding their learning experience. This paper focusses on the quantitative component of the Phase 2 data collection. The qualitative findings are reported separately.

Sampling

Following ethics approval from the University Human Research Ethics Committee (UHREC) (Reference No. 1200000588) of Queensland University of Technology, participants were drawn from a cohort of third-year student nurses in the Bachelor of Nursing undergraduate program (five-year degree). The total pool was 175 students. Convenience sampling strategy was employed. Eighty-five (n = 85) students consented to participate. These students were then randomly allocated into the intervention and control group. The same inclusion criteria for the intervention and control groups were employed; these were third-year nursing student enrolled in five-year programme at the Faculty of Nursing of CUDLSM, registered and studying Reproductive System II under the national nursing curriculum and having fulfilled the prerequisite course Reproductive System I.

Instruments

A purpose built instrument (the clinical vignette) was constructed to allow the evaluation of clinical-reasoning skills. The clinical vignette was a short, purpose-designed scenario that described a health situation related to high-risk pregnancy. Drawing upon previous work by Botti and Reeve (2003), it contained relevant, but insufficient information about an existing health problem. It also contained information that was irrelevant to the problem. If students wished, they were allowed to request additional information about the problem as they worked through the vignette. The content of the vignette was based on the undergraduate nursing curriculum and the maternity nursing texts (Ackley, 2011; Chapman, 2010) that were relevant to the high risk pregnancy subject being studied by the study participants. Using a system adapted from Botti and Reeve (2003), students' responses were scored. In addition, participants were asked to identify their level of self-confidence in the process of thinking on a 1-5 scale where 1=Not confident at all and 5=Extremely confident. This scale was adapted from the Student Satisfaction and Self-Confidence in Learning published by the National League for Nursing (NLN) (National League for Nursing, 2012) since the original version was developed for assessing students' self-confidence in a simulation context. Two processes were employed to assess the content validity of the clinical vignette including review by an expert panel and review by a sample of undergraduate nursing students. Results of the validation processes are reported separately.

Implementation

The usual teaching by the control group was lectures and group presentation. The lectures mainly involved teacher-centred learning and focused on relevant content and learning outcomes. For the group presentations, students formed groups of approximately 7 – 8 students and each group was allocated a specific topic to prepare and present to the class. In addition, student preparation for the presentations was outside the lecture time and no teacher guidance was provided during the preparation. In contrast to the usual teaching approach, the educational intervention focused on students working in small groups (5-6 students per

group) on case-based scenarios that became progressively more complex throughout the implementation period. Consistent with the principles of Cognitive Apprenticeship, a key feature of the group work environment was the provision of expert modelling, coaching and explicit guidance by the teacher where needed. Thinking aloud and reflection on thinking by students and the teacher occurred throughout the group interactions. Implementation of the study occurred over a period of six weeks within the high-risk-pregnancy nursing care subject that was part of the National Bachelor of Nursing curriculum. During this period, the group work activities occurred on a weekly basis for three hours per session. Teaching activities in the intervention group were performed by the researcher while the usual teaching was implemented by the subject teachers.

Data Collection

Data were collected at pre-test (Time 1) and post-test (Time 2). Students were asked to respond to the five clinical reasoning questions which accompanied the clinical vignette, and had the opportunity to request additional information as they worked through the clinical vignette. Two outcomes were measured using the clinical vignette: 1) students' clinical reasoning; and 2) students' perceived self-confidence in clinical reasoning. Students' clinical reasoning was measured using two primary variables - accuracy and inaccuracy in clinical reasoning. The clinical vignette that was developed for evaluating the educational intervention was a short, purpose-designed scenario describing a health situation related to high-risk pregnancy. It contained relevant but insufficient information about a 'problem' being experienced by a woman receiving antenatal care. The clinical vignette also contained information that was irrelevant to the 'problem' (Ackley & Ladwig, 2011; Chapman & Durham, 2010). Students were asked to respond to the five clinical reasoning questions provided, which accompanied the clinical vignette, and had the opportunity to request additional information as they worked through the clinical vignette (Yauri, 2015). In addition, they were asked to rate their level of self-confidence in responding to every question, using five levels of self-confidence ranging from 1 (not confident at all) to 5 (extremely confident).

Data Analysis

Group means and standard deviations were calculated. Sphericity test showed equality of variance of the differences between each pair of the measured values. Therefore, Group and Time differences were analysed by Mixed-Design Anova. A significance level of alpha ($p< 0.05$) was used and eta squared (η^2) was calculated.

Results

Eighty per cent of the participants in this study were aged 19–21 years, and

Table 1 Changes at Time1 and Time 2 in Overall Scores for Intervention and Control Groups

Variables	Time	Control Group (n= 43)		Intervention Group (n = 42)		M Difference
		M	SD	M	SD	
Accuracy in clinical reasoning	1	6.86	1.35	6.67	1.30	0.19
	2	6.12	1.24	9.74	1.4	3.62
Inaccuracy in clinical reasoning	1	8.65	1.65	8.74	1.86	0.09
	2	8.44	1.39	7.48	1.58	0.96
Self-confidence in clinical reasoning	1	86.63	20.56	70.60	14.81	16.03
	2	72.84	11.28	72.83	14.03	0.01

Table 2 Changes at Time1 and Time 2 in Overall Scores for Intervention and Control Groups: MD ANOVA Results

Variables	Effect (F)	F	Sig.	η^2
Accuracy in clinical reasoning	Group	49.68	0.000	0.37
	Time	57.90	0.000	0.41
	Group X Time	155.6	0.000	0.65
Inaccuracy in clinical reasoning	Group	2.84	0.095	0.03
	Time	9.96	0.002	0.11
	Group X Time	5.09	0.027	0.03
Self- confidence in clinical reasoning	Group	1.29	0.26	0.01
	Time	0.002	0.96	0.01
	Group X Time	2.35	0.13	0.00

*$p < 0.05$

approximately 85 per cent were women. Data from participants' demographic characteristics showed sample homogeneity. The Phase 2 results indicated that educational intervention had a positive impact on the accuracy of participants' clinical reasoning. This was indicated by their responses to a purpose-built clinical vignette and comments in regard to their learning experiences within each of the study conditions. Participants' pre- and post-test scores for accuracy, inaccuracy and self-confidence in clinical reasoning are reported in Tables 1 and 2.

As shown in the Table1, there was an increase in the mean of overall accuracy scores for intervention group students from time 1 (6.67) to time 2 (9.74). In fact, the mean of overall accuracy scores of the intervention group was higher than the control group as many as 3.62. Although there was a decrease in overall accuracy scores for intervention group students from time 1 (8.74) to time 2 (7.48), the overall scores on inaccuracy in clinical reasoning, the mean difference between the control and intervention groups at time 2 was very small (< 1). Furthermore, the control group had a higher overall score for self-confidence in clinical reasoning than the intervention group at Time 1 but had no difference in the mean overall score at Time 2. To avoid Type 2 errors, changes both from Time 1 and Time 2 as well as differences between the overall scores for intervention and control groups were analysed using a Mixed-Design ANOVA. Details of results are shown in Table 2.

A Mixed-Design ANOVA analysis revealed a significant interaction effect between Group and Time, Wilks' Lambda = 0.35, $F(1, 83) = 155.6$, $p = 0.000$, with a very large effect size ($\eta^2 = 0.65$). Similarly, there was a significant main effect for Time, Wilks' Lambda = 0.59, $F(1, 83) = 57.90$, $p = 0.000$, $\eta^2 = 0.41$ (very large effect size) with an increase in the mean overall accuracy scores for intervention group students. A significant main effect was also found for Group, $F(1, 83) = 49.68$, $p = 0.000$, with partial eta square showing a very large effect size ($\eta^2 = 0.37$) (Pallant, 2013), suggesting a difference in the effectiveness of the educational intervention and usual teaching on students' overall accuracy in clinical reasoning. This results depicted a statistically significant increase in students' accuracy in clinical reasoning after the six-weeks educational intervention. As multiple comparisons in MD ANOVA employ the Bonferroni correction to prevent Type I error, a more stringer alpha level is used. With inaccuracy in clinical reasoning, there were no significant differences ($p > 0.05$) found between the two groups at Time 1 or Time 2 for the overall scores. Similarly, results from self-confidence in clinical reasoning did not reach significance.

Discussion

The present study found significant differences in the accuracy of students' clinical reasoning for those who received the educational intervention compared to those who received usual teaching. However, the

results for inaccuracy in clinical reasoning were insignificant between the two teaching approaches. Students participating in the study were in the third year of a five-year Bachelor of Nursing programme and were not experienced in domain-specific knowledge. Perhaps, similar to Botti and Reeve's (2003) study, the lack of significance seen in the inaccuracy results of the present study might be related to the students' lack of experience with the subject content and the fact that higher level ability is required to make precise discriminations between what may be unfamiliar data—as opposed to the recognition of more familiar data—and hence, the differential effects on accuracy and inaccuracy seen in the intervention group's clinical reasoning.

Results from the intervention and control groups' responses to self-confidence in clinical reasoning revealed no significant differences between the intervention and control groups' perceived self-confidence at either Time 1 or Time 2. However, there were trends in the data that suggested that at Time 2, the intervention-group students perceived a high level of self-confidence in identifying possible interventions, selecting the most appropriate interventions, and in their decision-making process compared to the control-group students. This result differs to findings from a longitudinal study by Patterson (2006). The results suggested that students' self-confidence was significantly increased. The differences between Patterson's study and the present study suggest that the shorter length of the current study might have influenced the results. This highlights the possible influence of time and practice in developing student self-confidence in clinical-reasoning skills.

It is possible that the lack of statistical significance in the results for students' self-confidence reflected an overconfidence factor that has been reported by Berner and Graber (2008). According to these authors, people are more likely to rate their confidence beyond the accuracy of those judgements and notably, overconfidence seems to disappear in easy tasks but intensify with difficult tasks. The intervention and control groups in the present study might have responded overconfidently to the clinical-reasoning questions at Time 1 by choosing 'confident' or 'extremely confident'. Consequently, the levels of self-confidence after the educational intervention were perceived to be similar to the self-confidence levels expressed at Time 1. As a result, a significant difference between Time 1 and Time 2 was not detected. Despite insignificant results, the intervention group demonstrated a positive direction in changes in self-confidence, while the control group revealed a negative trend in self-confidence in clinical reasoning.

Reflecting on the overall findings of this study, it is proposed that three key factors were instrumental in achieving the partially positive outcomes including situating the knowledge through case-based learning; making clinical reasoning visible using a 'think-aloud' approach with students; enhancing collaboration through small peer-group discussion. Situating knowledge through case-based learning was a key element of the design and implementation of the educational intervention. According to Brown et al. (1989), situating learning in an authentic context (i.e. situations that would usually involve the relevant knowledge and skills) assists students to develop the cognitive and metacognitive skills important to solving real-life problems. Contextualising learning according to culture and the environment where the knowledge is constructed and employed enables students to develop conceptual models of the targeted tasks or procedures before practicing the knowledge and skills in the real environment (Brown et al., 1989). Thus, contextualising learning facilitates the development of expertise in a specific area (Brown et al., 1987; Collins et al., 1991), which includes disciplinary knowledge (e.g. key concepts, principles and demonstration of procedures), techniques or approaches for making judgements, and self-regulation (e.g. ability to identify, select appropriate strategies and re-evaluate decisions made if needed).

For the purpose of the present study, the learning activities were contextualised within case scenarios that were drawn from examples of high-risk-pregnancy situations that students are likely to encounter in their everyday practice. This differs from the usual teaching methods used within the Bachelor

of Nursing at CUDLSM, which generally involve more traditional didactic approaches. Studies support the use of case-based learning to develop students' cognitive and metacognitive skills (Wosinski et. al., 2018; Gholami et al., 2016). During the process of problem solving, students need to recursively monitor and correct their decisions in previous steps or use their metacognitive skills (Wosisnski et al., 2018; Gholami et al., 2016). Thus, compared to didactic instruction, the use of a case-scenario approach offers a potentially more effective manner in which to assist students to connect what they are learning to the knowledge and skills required in real-life situations.

As discussed by Brown et al. (1987), a key element of cognitive apprenticeship is to make the process of thinking used by experts visible to students to enable their development of the cognitive and metacognitive skills needed to solve complex problems. In a cognitive-apprenticeship approach, expert thinking is made transparent through community-of-practice interactions between students and teachers. To learn expert thinking, students are required to participate actively in the activities and observe how experts use their thinking to solve the complex problems in real-life situations.

To facilitate the visualisation of expert thinking, the present study employed a 'think-aloud' approach in which teacher verbalised their thinking. This included discussion of the assumptions, clinical-reasoning logic and usage of relevant evidence in relation to the case scenarios (Calleja et al., 2011; Pinnock & Welch, 2014). This is different from the usual teaching method employed in the Bachelor of Nursing course at CUDLSM, in which the expert thinking is generally hidden, as teachers do not verbalise their process of thinking. The focus in this course is on traditional learning through the information-dissemination approach that requires students to memorise content (Collins et al., 1991; Dennen & Burner, 2008).

The think-aloud approach can be beneficial for both teachers and students. Using of this approach, students can observe the thinking processes employed by the teacher to solve complex problems and, consequently, they can observe how knowledge and skills are employed (Johnsen., Slettebø., & Fossum, 2016). When the think-aloud approach is used interactively with students participating in the exchange, they are able to make linkages between the current information being provided and knowledge from their long-term memory (Gazzaniaga et al., 2010). Facilitating the articulation of their thinking processes enables students to self-assess their thinking and subsequently self-correct their thinking and, thus, their metacognitive skills development. For teachers, thinking aloud interactively with students can also act as an assessment strategy. It allows teachers access to students' cognitive and metacognitive processes and thus provides formative information on the level of support needed by the students. For these reasons, scholars argue that the think-aloud approach is an effective strategy for enhancing students' clinical reasoning (Forsberg, Ziegert, Hult & Fors, 2013; Johnsen., Slettebø., & Fossum, 2016)

Collaboration through a small-group discussion was another key element of the design and implementation of the educational intervention employed in the present study. Learning through collaboration is consistent with the community-of-practice concept, which emphasises the social dimension of learning and knowing. In a community of practice, the sharing of perspective, expertise, experiences, activities, information and knowledge promote the active participation of the community members (Collins et al., 1991; Laal & Ghodsi, 2012), which allows the creation of collaborative learning environments that engage students and teachers (Collins et al., 1991). Learners become involved in a community of practice, which can transform passive ways of learning to active participation in the learning experience. As discussed by Karagiorgi and Symeou (2005), collaborative learning environments enable students to develop, compare and understand multiple perspectives of an issue, as well as develop a meaningful understanding through developing and evaluating the opinions of others. This is consistent with Collins et al.'s (1991) views on the sociology aspect of the learning environment, which emphasises the importance of the social process in providing

opportunities for students to observe procedures and attitudes demonstrated by the expert, as well as the values, judgement processes and cultural elements that inform the thinking process and decisions made. Laal & Ghodsi (2012). believe that students can experience pleasure and satisfaction when they solve a problem. According to Gazzaniaga et al. (2010), positive learning experiences are more likely to be repeated. Arguably, experiencing pleasure and self-satisfaction in learning is an effective precursor to enhance self-confidence and continual use of problem solving as the students' manner of learning. It is important that communication between teachers and students facilitate students to share their thinking in a non-threatening environment (Laal & Ghodsi, 2012).

In the present study, collaboration was facilitated in the small peer-group discussions of case scenarios in the context of high-risk pregnancy. The group discussions were designed to provide opportunities for students to develop, compare and understand multiple perspectives through meaningful activity and social interaction. Learning was guided by the teacher using relevant strategies such as thinking aloud and providing hints. This differs from the usual teaching methods used in the Bachelor of Nursing course at CUDLSM, which generally involve teacher-centred learning and are focused on individual activities and learning achievement. Studies support the use of a collaborative learning approach to develop students' clinical-reasoning skills.

Considering all the results of this study, it is argued that the interplay between authentic contextualisation of learning, the use of a 'think-aloud' approach to model expert clinical reasoning, and the promotion of peer collaboration through small peer-group discussions conducted in an informal environment facilitated more effective learning outcomes for students in the intervention group (compared to the students in the control group). The contextualisation of learning provided by the educational intervention gave this group a clear and relevant learning context and activities that fostered a meaningful learning experience for students. This was scaffolded by the deliberate use of the think-aloud approach by the teacher and supported by the small-group discussion, which promoted students' active participation in the learning activities.

Conclusion

This study found that the educational intervention implemented in this study demonstrated some positive effects on students' development of clinical-reasoning skills. These findings highlight the benefit of a contextualised learning experience, collaborative construction of knowledge and the role of thinking aloud in achieving positive outcomes for students' clinical-reasoning skills; these are the key of the positive outcomes of this study. In particular, the educational intervention was identified as able to enhance accuracy in clinical reasoning in the intervention-group students and provide a more enjoyable learning experience for the students. Having a clear educational model will enable teachers to reflect critically on the construction of learning experiences that facilitate students' development of habits of inquiry and complex thinking skills. From the overall results of the study, it is argued that the educational intervention had a number of positive effects in relation to facilitating students' clinical-reasoning skills. Further research to investigate the effectiveness of the educational intervention with a larger sample size will be needed.

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Relationship between Family Anxiety, Family Support and Quality of Life of Attention Deficit Hiperactivity Disorder (Adhd) Children

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Abstract

Attenton Deficit Hiperactivity Disorder (ADHD) is behavioral disorder characterized attention deficit disorder, impulsive behavior, accompanied by excessive activity that is inconsistent with age in childhood, ADHD can impact the decline in the quality of life of children, some of the factors that influence anxiety among families and family support. This study aimed to analyze the relationship between anxiety of family and family support for ADHD children's quality of life in Extraordinary school type C Bandung. The study design was cross-sectional quantitative analytic. The subject of research totally 87 ADHD families with children aged 8-12 years who attend school in 5 pieces of extraordinary school type C Bandung but there was something problem like rejection, no have time and others therefore 63 samples were collected. Sampling using total sampling technique with 3 pieces inventory questionnaire including children's quality of life questionnaire (PedsQL), family anxiety (STAI-S) and family support (CASSS). Data were analyzed using Pearson correlation coefficient. The results showed a correlation between anxiety and family support families with ADHD children's quality of life as well as having a fairly strong correlation ($r = 0.75$ and $r = 0.78$). That is, an increase or decrease in the quality of life can be determined by changes in the anxiety of family and family support simultaneously. Increased family anxiety can reduce the quality of life of children ADHD whereas the increase in family support can improve the quality of life of children ADHD. Nurses are expected to increase school health services by involving schools, families and communities as well as the expected nursing policy makers in order to make policy on the procurement of health-based community health nursing school.

Keywords: ADHD, anxiety, family support, and quality of life.

Introduction

Common problems that often hinder the development of school-age children is Attention Deficit Hyperactivity Disorder (ADHD) or Attention Concentration Disorders / Hyperactivity. ADHD which is a behavioral disorder characterized attention deficit disorder (inattentiveness), impulsive behavior (impulsivity), and may be accompanied by excessive activity (overactivity / hyperactivity) that are not in accordance with the age in childhood (American Psychiatric Association / APA, 2000).

ADHD case more often encountered in the community, where the number of events is increasing, especially in children of school age. ADHD prevalence in school-age children around the world about 3%–10%, although the prevalence varied substantially (Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007). Prevalence ADHD in East Asian countries, showed that the prevalence was similar between the West and non-West area which was around 8.1% to 8.6% (Gau, Chong, Chen, & Cheng, 2005; Takahashi, Miyawaki, Suzuki, Mamoto, Matsushima, Tsuji , & Kiriike, 2007). In Indonesia, the number of events are still unaccounted for exact figures, although it looks pretty much abnormality occurs and is often found in children of preschool and school age (Judarwanto, 2007). However, in a study by Wihartono (2007).

The impact of the combination of symptoms ADHD third-symptoms including symptoms of hyperactivity, and impulsivity inatensi which can lead to an abnormal child development so difficult for children with ADHD to excel in school. ADHD hyperactive behavior makes the child have difficulty when it is a social institution (Vaughan, Roberts & Needelman, 2009). Many of the children ADHD have difficulty in school, often problematic forms of discipline or academic difficulties (Weyandt & DuPaul, 2006).

Such conditions would cause suffering and obstacles to children in performing daily functions. A variety of other disorders that can occur in children ADHD such as lack of self-esteem, impaired interact with peers, family and also disturb the readiness of children to learn and overall will make the decline in the quality of life of children (Escobar, Soutullo & Hervas, 2005; Nijmeijer, Minderaa, & Buitelaar, 2008; Varni & Burwinkle, 2006; Strine, Lesesne, & Okoro, 2006).

ADHD child's quality of life is inseparable from some of the factors that influence it. According to Jeanne, Landgraf, Rich, & Rappaport (2002) factor of the quality of life of children ADHD can be seen from the impact or AIM (ADHD Impact Module) including health status of children, the frequency of experience "success" of children with parents in the home, the assessment of parents (child health, child discipline, parenting to the child, and the child's behavior), a child's diagnosis, how long the child gets treatment, and the role of families in supporting children ADHD. Another factor that affects the quality of life of children ADHD among other demographic factors, family support, clinical, physical, emotional, family and social anxiety (Riley, 2006;Wehmeier, Schacht, & Barkley, 2010; Sánchez, Cortés, Carlos, Moren, 2012; Theole, 2010).

Seeing the adverse conditions both for children and for families ADHD, it would require the support and participation of health workers, one of them based community health nursing school. Based community health nursing schools do not just pay attention to the quality of life of school children alone but noticed throughout aspect, be it schools, families and society as a whole and organized. According toCenters for Disease Control and Prevention (2011), Murray, Low, Hollis, Cross, & Davis (2007), responsibility for the health community nursing schools include; health education, physical health education, health services, nutrition services, counseling services, psychological, and social services healthy school environment, health promotion staff of teachers in schools, as well as community and family involvement.

But the existence of community-based school health nurse is still active in Indonesia, especially in Bandung. Community nurse completely still watching school health, especially the health of special needs schools. Community nurses in health centers still tend to provide comprehensive primary care to a variety of age groups.

Based on the descriptions above, in

Indonesia has never done research on the quality of life of children with ADHD. Although the quality of life of children ADHD study ever conducted in the United States and Europe, a similar study is also important in Indonesia because of demographics of these countries are very much different from the demographic situation in Indonesia. Therefore, I am interested to see the relationship between the anxiety of family and family support for quality of life ADHD children's in extraordinary school type C in Bandung.

Method

This research was a quantitative research, used analytic method with cross sectional approach. This study analyzed the relationship of anxiety families and family support on quality of life of children with ADHD. The sample in this study were families who have children of school age who have ADHD the inclusion criteria including; 1) school-age children by the age of 8–12 years old who have a diagnosis of ADHD by a psychiatrist; 3) studying at extraordinary school type C in the Bandung city; 4) live with biological parents; 5) the parents are willing to follow the research process; 6) The family-owned ADHD child does not have a physical disability such as blind, mute, paralyzed and so on.

ADHD children Quality of life was measured using the Pediatric Quality of Life Inventory (PedsQL) Generic Core version 4.0. The questionnaire consists of 23 statements consisting of: 1) Physical Function 8 statements; 2) The function of emotions 5 statements; 3) The social function 5 statements; and 4) The function of school 5 statement. This questionnaire consists of choice answers using a Likert scale (never, sometimes, often and always). The answer is never worth 1, sometimes worth 2, often worth 3 and is always worth 4 for a positive statement while negative questions worth instead. All of the answers will be summed for a total score of the whole. The highest total score of 92 and the lowest score is 23.

Family anxieties instrument used is questionnaire State-Trait Anxiety Inventory (STAI-S) composed of 20 short statement with less than 5 minutes in filling the answer. Choice answers on the questionnaire using Likert scale never, sometimes, often and always with a mark (√) in the column never, sometimes, often and always, value score a minimum of 20 and maximum of 80 with an indication of the higher the score the more anxious. Anxiety is divided in three categories including high, medium and low. High anxiety if the total score 61–80 anxiety, anxiety was for a total score of 41–60 and low anxiety with a total score of 20–40.

Family support instruments used in this study was a questionnaire the Child-Adolescent Social Support Scale (CASSS). This questionnaire consists of 12 items representing 5 subvariable statements include family support; 1) emotional support; 2) The instrumental support; 3) informational support; 4) support awards and 5) social support. All statements have a choice of answers using a Likert scale; always, often, sometimes and neverby way menyontreng with a mark (√) in the column always, often, sometimes and never which are available, the highest score value of family support is 48 and the lowest score is 12. Family support expressed either if the total score of 25–48 and less good family support with a value of 12–24.

Overall this questionnaire was to test the validity and reliability tests with Cronbach's Alpha was (0.86; 0.85; 0.90). Overall the questionnaire used is the inventory questionnaire in English, it had previously been done translation (translation) prior to Indonesian and do the translation back to English (back translation) was done and has been examined by two lecturers who are competent in their field. From the results obtained back translation no meaningful difference between the transitional English-Indonesian and Indonesian-English, so that questionnaires can be used. To determine the relationship between anxiety family, family support and quality of life of children ADHD with normal distribution of data used Pearson correlation test.

Results

The results of this study will look at the relationship between family anxiety, family support and quality of life in children ADHD using Pearson correlation.

Based on Table 1 above shows the relationship between family anxiety and the quality of life of ADHD children with a value of p = 0,000 (p <0,005). The relationship analysis of family anxiety with the quality of life of ADHD children showed a positive pattern, meaning that the higher the value of family anxiety increase the value of quality of life of ADHD children and had a relatively strong relationship (r=0.75).

From Table 2 shows the relationship between family support and the quality of life of children with ADHD characterized by the value p = 0,000 (p <0.005). Analysis of the relationship between family support and the quality of life of ADHD children showed a positive pattern, meaning that the higher the value of family support, the higher the quality of life of ADHD children and both variables had a relatively strong relationship (r=0.78).

Table 1 Relationship Family Anxiety with Quality of life ADHD Children's (N = 63)

Variable	Mean	Std. Deviation	Pearson Correlation	p Value
Family Anxiety	46.71	7.510	0.749	0.000

Table 2 Relationship Family support with Quality of life ADHD Children's (N = 63)

Variable	Mean	Std. Deviation	Pearson Correlation	p Value
Family Support	26.98	7.223	0.783	0.000

Discussion

The results of the study the relationship between the anxiety of families with children living quality of this ADHD gain value (p = 0.00), this indicates a significant relationship between anxiety families with children ADHD quality of life and have a relationship that was quite strong (r = 0.75). The results of this study are similar to studies Theule (2010), family anxiety had a significant association with the quality of life of children ADHD (p = 0.000). The results also in line with research conducted by Lange et al (2005), concerns a family has a significant relationship with the child's quality of life ADHD. Further research by Royen (2007), showed a significant relationship between the quality of life of children with feelings kekhawtiran ADHD family and family functions.

The results of this research project the theory by Semiun (2006), anxiety is not always a bad impact, the adaptive response of anxiety will increase the motivation of individuals to do something useful. Resubmitted by Murray & Johnson (2006), the anxiety factor family has contributed to the quality of life of children ADHD. Anxiety family will significantly alter the function of the family, the family will improve the supervision of children and consistent approach to discipline the child to reduce the risk of their behavior. Similar delivered by Podoloski & Nigg (2001), family anxiety will affect family coping ADHD to adapt dealing with children, families will tend to look for other sources of information to deal with children ADHD, such as how to improve social support,

Judging from the view of the community nursing, their relationship with the family anxieties lives of children ADHD it indicates that the feelings experienced by the family plays an important role to changes in the quality of life of children ADHD. Community nurses see this phenomenon would be important for the community

nurses in caring for the family anxiety conditions. As presented Mubarak (2006), the support of community nurses prioritize promotive and preventive continuously without neglecting curative and rehabilitative services completely and comprehensively addressed to the individual, family, group to improve life function optimally, so as to be independent in health efforts ,

Independence of the family in maintaining the health and realize health is a major factor to be achieved by community nurses to families who are experiencing anxiety. Community nurse has hope to families that have the ability to identify health problems experienced by, set of health problems and prioritize problems, solve problems, cope with their health hadapai and evaluate the extent of solving the problems they face, which ultimately can improve the ability to maintain the health of independently (self care).

Attainment of independence families would not be separated from the community nursing strategy adopted them; provide health education. Health education in the form of a dynamic process of behavior change, where the change is not just a material transfer process / theory from one person to another and it is not a set procedure. However, these changes occur within the consciousness of individuals, groups or society itself. This family anxiety problems, nurses can provide health education about the positive things that can reduce anxiety among families with spiritual approaches, families are encouraged to draw closer to God Almighty, strive always grateful and believe that all the provisions of his was the best thing and definitely has a wisdom behind it. Then, provide health education related to information important in controlling anxiety families, such as providing health information to improve the health of children ADHD.

Then, a strategy that can be applied to families: partnership (cooperation). Various health problems that occur within the family environment. Therefore, cooperation is needed in order to achieve the purpose of nursing care through these efforts the various problems in the family will be resolved faster. This cooperation strategy will involve schools, families and communities. The school, family and community to get referrals to provide moral support and social terhadapo those families who have children ADHD, so expect the support of the collective of the school, the community towards families with children ADHD so do not feel isolated or embarrassed by her condition.

Apart from the role of community nurses, this study also showed relatively good family economic circumstances. It would be good for families, in addition to their role as well as community nurses, school and community. Established economic status present a materially prosperous. so that allgood family needs a healthy family needs and the needs of families who are sick can be fulfilled properly without increasing the burden on families. Landgraf, Rich and Rappaport (2002) describe the quality of life of older people was good, will have an impact on the behavior of parents of children ADHD. Most of the quality of life of parents are well illustrated by the lives of good economic status as well.

Caring for a child ADHD not only requires sensitivity, positive aspects and the role of parents is needed. However, to shape the child's behavior is very necessary ADHD internal cognitive and affective adequate parents (Belsky, 1984 in Theule, 2010). Internal cognitive aspect is characterized by a high level of education. Higher education can bring out the sensitivity of parents to their children what was needed, a sense of responsibility, consistent and their unity (Belsky, 1984; Erickson & Reimer, 1999, in Theule, 2010).

The results of the research study Moen (2014), parents with children ADHD in Sweden do not always have lower education, more than half (69%) of parents have a higher education. ADHD parents with children not only need patience and a positive attitude, but more than it should have special skills (cognitive) in providing good care to children with ADHD.

The level of education has associated with the behavior, especially the behavior of parents of children with ADHD. Higher education reflects the mindset of someone who is able to adopt a positive attitude so well that it will be useful in the application of health care in children with ADHD. In

line with the opinions Notoatmodjo (2008), educational level is an indicator that someone has menepuh formal education in a specific field which is an indicator that someone has mastered several disciplines. Someone with a good education, a more mature toward processes of change in themselves and change others and the environment, making it easier to accept outside influences are positive, objective and open to a variety of information including health information.

Families who live with children with special needs tend to worry and difficulty in maintaining and caring for a child with special needs, especially children ADHD. ADHD child showing hyperactive behavior, impulsivity and inatensi that tend to harm both the family and for others. This will lead to increase the feeling of fear the family so that the family tried to find a solution how to provide care to improve the health of children ADHD.

In addition, factors that support families to improve child care ADHD a good level of education that is family owned so that families have sufficient knowledge in receiving and managing information on child care ADHD to improve the quality of life of children with special needs. Internal cognitive aspect is characterized by a high level of education. Higher education can bring out the sensitivity of parents to their children what is needed, a sense of responsibility, consistent and their unity (Belsky, 1984; Erickson & Reimer, 1999, in Theule, 2010).

The results of the study showed that the relationship between family support ADHD child's quality of life obtain the value (p = 0.00), this indicated a significant relationship between family support with the quality of life of children ADHD. and have a relationship that was quite strong (r = 0.78). In line with the research Riley (2006), the results of research states that behavioral factors and support families who are not well significantly to the quality of life of children ADHD (p = 0.00). Family support that is not balanced, as not motivate the child, there is no time to play with children, do not protect children and do not understand the characteristics of children will have an impact on the psychological side of the child, the child felt ignored by a family so this has an impact on the quality of life of children with ADHD.

Next, the research by Rommelse, Altink, Oosterlaan, Buschgens, Buitelaar, and Sergeant (2008) The results showed a good family support had a significant relationship with the child's quality of life was good ADHD (p = 0.00). Lange, Sheerin, Carr, Dooley, Barton, Marshall and Doyle (2005) in The observations mentioned that family support is very influential on children's health improvement ADHD.

Based on the theory of Friedman (2003),family support is an attitude, actions and acceptance of family to sick patients. Family members saw that the people who are supportive are always ready to provide help and assistance if needed. The family is an important part of the health for the whole family. Parents are the most important part in the survival of a family, a good parent has the potential to promote health, feeling happy (well-being) and the development of physical and emotional, as well as the prevention of diseases and social problems that afflict the next generation (Gage, Everett & Bullock 2006).

Presented by Moen (2014), besides impact on self and social life, the impact of children with ADHD also felt by the family. Families must adapt to maladaptive behavior arising from ADHD children and families should prepare something unexpected happens to the child every day. Families should develop special skills in providing support, confidence and guidance to children with ADHD. In addition, families with children ADHD tend to have extreme experiences for their children, thus requiring them to adapt or have a positive coping with ADHD face child to care for, maintain and improve their quality of life (Podoloski & Nigg, 2001).

Scaramella & Leve (2004) describe the family is the most convenient place and the development of positive behaviors early on to children by teaching children about social values that exist in the home, school and community, as well as instilling religious values and other values. As well as providing protective treatment to the child's behavior. In addition, Tripp, Schaughency, Langlands & Mouat (2007) described the family was a source of support for the warmth / friendliness towards children at any time, the interaction

and the ability to interact with others and the environment and a comfortable place to play and fun for children. Overall support of the family can realize an optimal quality of life for children.

As a community nurse, the results of this study can be used as an initiation for nurses to use support families by involving schools, families and communities. Acting as a coordinator, a nurse can foster co-operation with schools, with the nearest health center, families and communities in order to provide health education, health promotion related to how to give good support to children ADHD family support at home, at school social support and social support surrounding communities. In addition, nurses are able to communicate to your family needs, so as to use the resources in family support to maintain and improve the health of individuals and family members (Ryan & Scullion, 2000).

Family support comes from a family that has a value of warmth, comfort and a high sincerity it will touch the child as a human instinct, so that the child will be more easily directed to the better in order to improve the quality of life. With the support of the family collective, it is not independent of family wisdom involving external environment (school and community) that together can improve the quality of life of children ADHD.

Based on these findings, the important thing is the anxiety of this growing family will have an impact on the quality of life of children ADHD reduction and increased family support will improve the quality of life of children ADHD. Family anxiety problems is a major issue that must be addressed by a community nurse. Nurses can pursue health promotion by involving families in an organized manner by solving the problems that they have to use the nursing process approach and expected them to be independent in maintaining their health through health education (Mubarak & Chayatin, 2009).

Health education efforts to the problem of family anxiety can nurse health counseling on how to cope with family anxieties by providing information about the child penanggulan ADHD, along with a spiritual approach method. So families can obtain information about how to improve and optimize efforts ADHD child health as their treatment can be given, the therapy can be given as well as schools that can foster a child with ADHD to realize the quality of life of children ADHD better.

Based on these findings show that family anxiety and support the family has a relationship simultaneously with the quality of life of children ADHD. That is, an increase or decrease in the quality of life can be determined by changes in the anxiety of family and family support simultaneously.

Studies conducted Ostberg & Hagekull (2000) in Sweden, the anxiety of family and family support had a significant association with the quality of life of children ADHD. Family anxiety can lead to increased family support. Families are anxious, have the initiative to seek solutions in solving problems that occur in family members, especially children ADHD so that such solutions will influence the changes in the role and function of a good family to family attention to children ADHD, compassion good and social support others. The linkage anxiety which leads to increased family family support can have a positive effect on quality of life of children ADHD.

According Crnic & Greenberg (1990), family anxieties contextually predictable various things including frustration experienced by the family, turmoil of family functioning and family stressors factors, but it is inseparable from the social circumstances support the family including friends, family and community. From the theory reveals that anxiety has a very close relationship with family support.

Problems link between the anxiety of family and family support for children's quality of life ADHD impact on the role of community nursing, especially nursing school health. As a result, the role of nurses to be double, nurses must be able to direct the family anxiety that can be projected into the emergence of a good family support so as to realize the quality of life of children ADHD.

Conclusion

There is a relationship between anxiety and quality of life for ADHD children.

Each increase in one family anxiety unit will increase the value of quality of life for ADHD children. And also relationship between family support and the quality of life of ADHD children. Every increase in one family support unit will increase quality of life for ADHD children.

Because quality of life children ADHD have connected with family anxiety and support nurse are expected to increase school health services by involving schools, families and communities as well as the expected nursing policy makers in order to make policy on the procurement of health-based community health nursing school.

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Factors Related To The Needs Of Parents Having School Age Thalassemic Children

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Abstract

Thalassemia is a major genetic blood disorder that has negative impacts on thalassemic children and their family. The needs of parents while caring for thalassemia children are important matters because the failure of meeting needs of parents may affect their mental and physical health. Yet, litle is known about factors that meeting the needs of thalasemic child parents. The study aim was to identify factors that correlate with the needs of parents having a school age thalassemic child in west jave province. This research used correlational analytic with cross sectional approach. The population in this study were parents of school-age children with thalassemia major totaling 136 people using the total sampling method. Data were analyzed with bivariate using chi square and biserial points. Then a multivariate analysis used logistic regression. The results showed the age of parents related to information (p = 0.005) and professional (p = 0.004), parent gender related to information (p = 0.000), professional (p = 0.017), social (p = 0.035), financial (p = 0.023) and spiritual (p = 0.009). Parental education is related to information (p = 0.000), social (p = 0.005), emotional (p = 0.000), financial (p = 0.016) and spiritual (p = 0.001). Parent income is related to information (0.000), social (p = 0.006), emotional (p = 0.000), financial (p = 0.003) and spiritual (p = 0.004). The number of thalassemia major children is related to emotional (p = 0.015) and financial (p = 0.013). Parental needs are related to several factors. The importance of increasing the role of nurses as educators and consultants and helping parents find sources of spiritual, emotional and financial support for parents of school-age children with thalassemia.

Keywords: Needs, parents, school-age children, thalassemia major.

Introduction

Thalassemia is an inherited hematological single gene disorder leading to anemia in affected children in the world that represents a major public concern in Southeast Asia, including Indonesia (Galanello & Origa, 2010; Mediani, Nurhidayah, Mardhiyah & Panigoro, 2017; Viprakasit Origa, & Fucharoen., 2014). According to the Indonesian Thalassemia Foundation-the central association of parents of thalassemia children that Indonesia is one of the countries with a high prevalence of thalassemia with the carriers of thalassemia around 5–10% and it is estimated that every year 500-600 babies are born with thalassemia. In 2015, thalassemia cases in Indonesia reached 7,029 cases. Meanwhile, cases of thalassemia in west java is the highest in Indonesia, it reachs 42% cases or 3,300 in early January 2016 (Kemenkes., 2017).

Thalassemia consists of minor thalassemia or the carrier and thalassemia major (Galanello & Origa, 2010; Regar, 2009). Thalassemia major is obtained genetically which is characterized by the reduction or absence of beta globin synthesis which results in the destruction of red blood cells in the bone marrow or spleen therefore, decreasing Hb, red blood cell production and anemia (Galanello & Origa, 2010; Marcdante, Kliegman, Jenson & Behrman, 2011).

When a child is diagnosed with thalassemia, parents start a new routine, are preoccupied with scheduling treatment, seeking information and learning about the treatment process, changing patterns of work, income, and responsibilities in the family and providing emotional support to children and other family members (Klassen et al., 2011; Pelentsov, Fielder & Esterman., 2015). Parents as caregivers should fulfil their duties of caring for school-aged children with thalassemia who need care for life (Astarani & Siburian., 2016; Pouraboli et al., 2015; Potts & Mandleco, 2007), but on the other hand they also need to meet the other children's needs, family members' needs and their own needs so that it requires great time, efforts and sacrifice (Astarani & Siburian, 2016; Klassen et al., 2011).

Need is an important thing and satisfaction is an indicator when needs have been fulfilled or not, in other words, someone will feel satisfied once they met their needs (Kim, Kashy, Spillers & Evans, 2010). Failure to fulfil needs results in an imbalance in one's condition that will affect mental and physical health (Asmadi, 2008; Winstanley, Simpson, Tate, & Myles, 2006). The health problems occurred in parents will affect the care of their children with thalassemia and lead an impact on children's health (Mediani et al., 2017; Wacharasin, Phaktoop & Sananreangsak, 2015), besides that, children also spend more time at home with parents compared to hospitals so parents can provide care better for their children (Wilder, 2010). The needs of parents in school-aged children with thalassemia are associated with long-term complications, blood transfusions and iron chelation (Mediani et al., 2017; Shosha, 2014).

The needs of information that needed by parents related to congenital blood disorders (carrier) in parents and how the scheme devolves to children, the vulnerability of thalassemia and managing side effects of transfusions such as iron overload. The needs of support are expected to come from family, friends, neighbours, teachers, nurses and physicians' supports regarding care, treatment and follow-up care (Mediani et al., 2017). Then the needs of financial are needed relating to thalassemia treatment: transportation costs, hospital admission costs when the child is sick, and costs while leaving his job to accompany his child (Mediani et al., 2017; Shosha, 2014). The needs of emotional of parents are related to the children's health condition, the severity of the disease and the responsibilities of parents. They live in fear and helplessness because their child's illness will worsen over time (Pelentsov, Dip, Laws & Esterman, 2015). The needs of spiritual are another urge for parents (Pelentsov, Dip, Laws & Esterman., 2015; Sujana, Fatimah & Hidayati, 2017). The needs of spiritual of parents concerned about the urge for meaning and purpose while caring for the child. Some parents feel unable to get involved with religious rituals and practices because of their child's illness, resulting in a crisis of faith.

Sociodemographic characteristics are strong predictors of not meeting the needs of

parents and must be considered in developing interventions to help parents meet their needs (Kim, Kashy, Spillers, Evans, 2010). Sociodemography means a description of the population as a whole or group and is categorized based on certain characteristics, such as age, socio-economy and distribution of residence (Adioetomo, 2010). Some literature showed that the sociodemographic characteristics of parents related to the needs of parents including age, gender, education level and income (Kim, Kashy, Spillers & Evans, 2010) and the number of children with thalassemia (Habeeb et al., 2015; Ishfaq, Naeem & Ali, 2013). According to Kerr (2008) and Pelentsov, Dip, Laws and Esterman (2015) based on the concept of supportive care needs, this needs are influenced by age, gender, education, economic status, family support, culture and religion. The Child's characteristic related to parents' needs is time period of being diagnosed (Golics et al., 2013).

Family involvement in nursing care is part of the philosophy of pediatric nursing, namely family-centred care (Kyle & Carman, 2014). Family-centred care is able to improve the quality of life of children with thalassemia (Nafafi, Borhani, Rabari & Sabzevari, 2011). Family-centred care is used as a standard of pediatric nursing practice that involves families/parents in caring for children (Kuo et al, 2012; Suza, 2017).

As a pediatric nurse who provides nursing care, it is necessary to understand the factors related to the needs of parents in order to provide appropriate interventions according to the parents' needs of school-aged children with thalassemia. If the nursing interventions provided are not in accordance with the parents' needs, parents will experience emotional distress and have difficulty caring for their child (Fitch, 2008).

The Aim Of The Study

The aim of the study was to analyze factors that relate to the needs of parents having school age thalassemic children at 4 government hospitals in West Java Province.

Method

This study used a quantitative method with correlational analytic research design and a cross-sectional approach. The cross-sectional study is observing the subject of the study once and carrying out the variable measurement at the same time (Keller & Kelvin., 2012). The study used the total sampling method to choose the overall sampling of the population (Sugiyono, 2013). The sample in this study were all 136 parents of school-aged children (6–12 years) with thalassemia major: 40 respondents from Distric Hospital 45 Kuningan; 20 people from Gunung Jati Cirebon Hospital, 23 parents from Majalengka Distric Hospital and 53 people from Sumedang Distric Hospital. Sample selection based on inclusion criteria that were parents who accompany their thalassemic children for having thallasemic treatment in those hospitals, parents who can read and write, parents with children who undergo transfusions and iron chelation treatment. While, the exclusion criteria in this current study was parents with children who have undergone splenectomy.

Data collection was carried out in 4 govenment distric hospitals in West Java Province for five weeks starting on July 3rd, 2018 until August 21st 2018. Data coolection method used in this current study was questionnaires which focused on the needs of information, emotional, and spiritual using supportive care need instrument modified from Kerr et al. (2007) and the needs of professional from Pelentsov et al. (2016) while social and financial needs using the family need survey instrument. Meanwhile, the factors studied were the parents' age, gender, education, parent income, number of thalassemia major children and the time period of being diagnosed.

Data analysis were processed by using the computer software. Several data analysis techniques used in this study: 1) Univariate analysis was performed to obtain the frequency from each variable, 2) Bivariate analysis was conducted to determine the significance of the relationship between each independent variable and one dependent variable using the chi-square test and biserial points, and 3) Multivariate analysis used logistic regression due to variables in this study is categoric.

This study was approved by the Health

Research Ethics Committee of the Faculty of Medicine, Universitas Padjadjaran. The ethics committee has reviewed the study protocol and determined that it adheres to ethical principles. Ethical approval number is 514/UN6.KEP/EC/2018. Permission for conducting this study was obtained from dean faculty of nursing and directors of the hospitals. All participants were asked to complete a consent form. Confidentiality was warranted by restricting access to the names of participants and demogarpahic details were separated from other data to ensure that respondents could not be identified. Only the researchers can access to the raw data.

Results

Table 1 Characteristics of Parents of School-Aged Children with Thalassemia Major in West Java

Variable	f(%)
Age (years old)	
Late Adolescent (17–25 years old)	42 (30.1)
Adults (26–45 years old)	71 (52.2)
Early Elderly (46–55 years old)	24 (17.6)
Gender	
Male	34 (25.0)
Female	102 (75.0)
Education	
Primary (Elementery School/Junior High School)	79 (58.1)
Middle (Senior High School/of the same level)	36 (26.5)
High (College)	21 (15.4)
Income	
< Regional Minimum Wage (IDR 2,250,000)	97 ((71.3)
> Regional Minimum Wage (IDR 2,250,000)	39 (28.7)
The Number of Thalasemia Major Children	
1 child	110 (80.9)
> 1 child	26 (19.1)

Table 2 Characteristics of School-Aged Children with Thalassemia Major in West Java

Variable	mean ±SD	min	max
Length of time diagnosed	7.5 ± 2.85	1.00	12.0

Table 3 The Needs of Parents of School-Aged Children with Thalassemia Major in West Java

The parent's needs	Low		High	
	f	%	f	%
Need of Spiritual	56	41.2	80	58.8
Need of Social	57	41.9	79	58.1
Need of Information	60	44.1	76	55.9
Need of Emotional	63	46.3	73	53.7
Need of Finansial	69	50.7	67	49.3
Need of Professional	74	54.4	62	45.6

Table 4 Relationship of Parents' Age, Gender, Education, Income, the Number of Thalassemia Major Children with Parents' Needs of School-Aged Thalassemia Major Children in West Java

Variable	The parent's needs					
	Information	Emotional	Professional	Financial	Social	Spiritual
	P-value	P-value	P-value	P-value	P-value	P-value
Age 17-25 years old 26-45years old 46-55 years old	0.005	0.213	0.004	0.683	0.320	0.168
Gender Male Female	0.000	0.136	0.017	0.023	0.035	0.009
Education Elementery Midle High	0.000	0.000	0.794	0.016	0.005	0.001
Financial < UMR ≥ UMR	0.000	0.000	0.103	0.003	0.006	0.004
The Number of Thalassemia Major Children 1 child >1 child	0.670	0.015	0.246	0.013	0.052	0.924

Table 5 Length of Time Diagnosed with the Needs of Parents of School-Aged Children with Thalassemia Major in West Java

Variable	Needs of Information	Needs of Professional	Needs of Social	Needs of Emotional	Needs of Financial	Needs of Spiritual
Length of Time Diagnosed	r = 0.170 p = 0.047	r = 0.127 p = 0.142	r = 0.222 p = 0.010	r = 0.265 p = 0.002	r = 0.202 p = 0.018	r = 0.157 p = 0.069

Table 6 The Significant Factors Related to the Needs of Parents of School-Aged Children with Thalassemia Major in West Java

Factors	Needs	B	Wald	p-Value	OR (CI 95%)
The Number of Thalasemia Children	Emotional	1.385	6.038	0.014	3.995(1.324-12.060)
	Financial	1.153	3.383	0.024	3.167(1.165-8.607)
Gender	Information	2.639	22.090	0.000	13.997(4.657-42.069)
	Professional	1.332	7.943	0.005	3.790(1.500-9.572)
	Social	1.288	7.865	0.005	3.625(1.474-8.918)
	Spiritual	1.411	9.790	0.002	4.100(1.694-9.922)

It can be seen from the table 1 above more than a half of parents are 26-45 years old (52.2%). Mothers tended to accompany children more during thalassemia (75.0%) compared to fathers (25.0%). The majority of parents' education is on the elementary level (58.1%). Most of the parents get income less than Rp 2,250,000 or below the West Java RMW (71.3%). The majority of parents have one child with thalassemia (80.9%).

The time period diagnosed is an average of 7.5 years with only a year diagnosed and a maximum of 12 years with an average and standard deviation of 7.5 ± 2.85.

Based on the table 3 above, the needs of spiritual (58.8%) and social (58.1%) were the two highest of the parents' needs, follows the need of information (55.9%),

emotional (53.7%) and for the two lowest of parents' needs were financial (49.3%), and professional (45.6 %).

Based on the table 4 above shows that the parents' age is related to the needs of information and professional with ($p < 0.05$). The gender has a relationship with each domain of parents' needs except emotional needs. Moreover, education and income factors have a relationship to each domain of parents' needs except professional needs ($p < 0.05$). Interestingly, the number of having a thalassemic child is the most related factor to emotional and financial needs, while others: the needs of information, professional, social and spiritual are significantly related to the gender of parents.

It can be seen from table 5 above there is a relationship between the length of time diagnosed with the needs of parents of school-aged children with thalassemia major, except for professional and spiritual needs.

Table 6 The Significant Factors Related to the Needs of Parents of School-Aged Children with Thalassemia Major in West Java

The table 6 above illustrates result of multivariate analysis which indicates the variables that most related to the needs of parents of school-aged children with thalassemia major, based on the p-value and the Odd Ratio (OR) value: more than one thalassemia children who need emotional support more than 3,995 times and needs of financial more than 3,167 times compared to only one child thalassemia. Furthermore, female parents tend to need of information support was about13,997 times, professional needs of 3,790 times, social needs of 3,625 times and spiritual needs 4,100 times compared to male parents.

Discussion

So far to our knowledge, this is the first study conducted in multisites in West Java to explore predicting factors that correlated to the needs of thalassemic child parents. The findings of this study found that the highest needs of parents are spiritual needs. Thalassemic children need a life-long of treatments such as regular blood transfusions and iron chelation therapy (Mediani et al, 2017; Pillitteri., 2010). This such long treatments may cause negative impacts on thalassemic children and their families (Prasomsuk, Jetsrisuparp, Ratanasiri, & Ratanasiri, 2007). Fulfilment of spirituality in parents provides strength and helps them in controlling the problems and their burdens that occur which are related to their children's illness (Mediani et a.l, 2017; Pillitteri., 2010; Sujana, Fatimah & Hidayati, 2017). Spirituality is a source for someone who is religious as his coping (Frey, Daaleman., & Peyton., 2005).

The meaning of spirituality is finding out whether parents can find the meaning and purpose of life when their children are sick. If parents cannot find the meaning and purpose of their life, as a nurse, they can help parents find the meaning of spirituality and encourage parents to use their spirituality as a strength in facing problems (Nur'aeni, Ibrahim & Agustina, 2013). The conditions faced by parents make their lives not as normal as before children suffering from thalassemia, thus, by these conditions parents can actually take wisdom in their lives (Hexem et a.l, 2011). Previos research conducted by Nuraeni, Nurhidayah, Hidayati, Sari and Mirwanti (2015) showed that almost all respondents in this study chose and knew the spiritual needs by finding the meaning of pain and suffering.

Age affects a person in expressing feelings and using coping through illness (Viedebeck., 2008). Usually, anxiety at a young age is easier to emerge from at an older age, but can also occur otherwise. The anxiety that occurs in the elderly can arise due to past experience of the same thing before (Kaplan & Saddock, 2010). Research conducted by McKenna, Coller, Hewitt and Blake (2010) found that older parents want more information support from health professionals in making decisions. The older the age of parents will experience a physical decline so that it has an influence in providing information (Fahra, Widayati & Sutawardana, 2017; Kaplan & Saddock, 2010). Therefore, the parents' physical decline limits parents in seeking information so that it requires information support, in contrast to young age who can seek information from various sources.

Fathers are more responsible for family finances, this is related to the culture that

the main breadwinner is a father (Handian, Widjajanto & Sumarni, 2017). In this study, most mothers did not work or as housewives and rely solely on income from their husbands. This makes the fathers have a greater financial burden so the financial support is more needed for the fathers than the mothers (67.6%). Meanwhile, mothers have a more sensitive feeling to their emotions that affect their emotional and psychologically status, they will easy to get anxiety and stress (Kaplan & Saddock, 2010). As Mediani et al. (2017) indicated that all mothers in their study experienced more fear and sadness because they felt worries and uncertainty about the future of their thalassemic child. Similarly, Oers et al. (2014) found that parents who have children with chronic diseases, especially mothers report high levels of anxiety and depression.

Interestingly, this current study is different from previous research conducted by Mundy (2010) that indicated the needs of mothers were not significantly different from fathers. In Asian culture, especially in Indonesia, fathers are required to remain calm in an emotional state and must control their emotions, so they are not free to express emotions (Kati, Opod & Pali, 2018). Although the gender in this study did not relate to emotional needs, the results of cross-tabulation showed that mothers needed high emotional needs (57.8%). Children with thalassemia pose an emotional burden to mothers because they are pregnant and raise children so they have stronger relationships with children.

Education is foundation for people to drive their ability in improving their health status; it enables people to be more productive to earn a better quality of life (Mediani, 2014). Low educated people tend to be less able to use effective and constructive coping compared to higher education levels so that they need the support of other coping sources (Davies et al, 2011; Notoatmodjo, 2007). Higher education will influence the thinking of parents so it is more rational in dealing with problems. People with having adequate knowledge and education tend to have effective and constructive coping when facing problems that will more easily overcome anxiety and fulfil their emotional needs (Mediani, 2014; Notoatmodjo, 2007). Results of this current study showed that some parents had low level education background, they finished their study from primary education (elementary/ middle school) only and the need of emotional support as much as 67.1%. This study finding is in line with research conducted by Cheah, Ling and Chang (2015) which identified that low education background (elementary school education) was significantly associated with non-fulfilment of needs ($p < 0.01$).

Literature reveals that people who have low basic education are more often faces spiritual distress (Caldeira, Csrvalho & Viera., 2014). Meanwhile, previous study found that people with having higher education tends to have more experience with spiritual needs (Forouzi, Tirgari, Safarizadeh, & Jahani, 2017). Findings of this current study indicated that parents with having higher education are more effective in using spirituality than people with having low education. This current research is concurrent with earlier study conducted by Rezaei, Fatemi, Givari and Hoseyni (2009) which showed that the level of education is related to spirituality, the lower the level of education, the greater the spiritual needs.

High income tends to get good tools in finding information to increase their knowledge (Thavorncharoensa et al, 2010; Novrianda, Yeni & Asterina., 2014). Results of study by Thavorncharoensa et al (2010) stated that income affects information needed by parents, both from visual audio or print media. According to Darmojo and Hadi (2006) people who did not work showed little change in the level of knowledge compared to people who work because they are more active outside so they get a lot of information from friends in their work environment. Previous study conducted by Novrianda, Yeni and Asterina (2014) showed that income has a meaningful relationship with knowledge ($p = 0.006$). High economic status has better opportunity to get whatever is needed including information networks, while parents with low economic status must think about spending money because basic needs are more important to them. Health professionals also tend to assume that low-income parents are able to understand and use information properly (Gallo, Knafl & Angst., 2009). Another study conducted by

Alam (2007) found that parents with low economic status are associated with not meeting financial needs, especially medical expenses. In this study, parents said that even though the cost of treating thalassemia was borne by the Social Security Organizing Agency (BPJS), but parents with low income said they had to bear other costs such as transportation because they used motorcycle taxis, public transportation and minibuses to the hospital.

Social support is very important for low-income individuals because it helps them overcome financial problems (Documet et al, 2015; Mediani et al, 2017). The family financial burden on health care can be reduced by family support (Golics, Khurshid, Basra, Salek & Finlay, 2013). The research conducted by Mashayekhi, Jozdani, Chamak and Mehni (2016) found that low income can significantly influenced social support. Results of this study is concurrent with this current study that parents with low income required higher social support. This current study fundings are supported by otherprevious study conducted by Norberg, Lindblad and Boman (2006), which showed that income was related to social support received by parents ($p = 0.012$). Parents who care for children with chronic diseases and also low-income people will greatly influence their social life, such as interaction with other people in daily activities will be carried out quickly or immediately abandoned even though these activities have not been completed (Golics et al, 2013).

The more number of children, the stress level of parents would be higher because the role that must be done is increased as parents who care for children (Alam, 2007; Mirbehbahani, Salehi, Jahazi, &Karimi, 2014). Research conducted by Mirbehbahani, Salehi, Jahazi and Karimi (2014) showed that having more than one child thalassemia was associated with depression in the elderly ($p = 0.01$). Parents who have two thalassemia children feel sad and disappointed hoping that their other children will not suffer from thalassemia. Parents with two or more thalassemia children have greater pressure than parents who have one child with thalassemia major (Sultana, Humayun, Humayun & Zafar, 2016).

The financial burden becomes a problem in the family when treating children with chronic diseases, especially genetic diseases (Mediani et a, 2017). This means parents who have more than one child are influential in the family, especially low socio-economic groups (Wahab et al, 2011). The number of children affects the family finances because more and more children are cared for causing greater costs.

Based on bivariate tests showed there was no relationship between the number of thalassemia children and the spiritual needs of parents but the results of cross-tabulation showed that parents who have more than one thalassemic child need spiritual support. Everyone depends on spiritual and religious support in controlling their emotions (Golics et al, 2013). In this study, the mothers always cried while praying and wondered why their child must suffer from thalassemia and be different from other children.

The longer caring for children with thalassemia, the more obstacles faced by parents and that such bariers must be overcome during caring for thalasemic children because parents will often feel anxious about the uncertain condition of the child (Mediani et al, 2017; Rachmawati, Ranuh & Arief, 2016). Infact the treatment of thalassemic children need a life-long treatments of regular blood transfusion and iron chelation therapy, however there is no certainty of recovery also makes parents feel anxious (Mediani et al, 2017; Pouraboli et al, 2015). Similarly, Norberg and Boman (2008) found that anxiety and depression that occur in older people still occured after 2.5 years since being diagnosed and 12% of parents with having children diagnosed of cancer more than five years continue to report the same thing. This is due to parents's coping was not effective in overcoming their psychological distress and fear knowing their child illness. In addition, long treatments of thalassemia such as routine transfusions cause negative impacts on thalassemic children. Changes in face shape, skin colour, splenomegaly and growth delay in their children and delaying puberty in children as common problems faced by thalassemic children as side effect of long routine transfusion that will cause concern to parents (Kahouei, Kazemzadeh,

Zadeh & Ahmadi, 2016; Mediani et al, 2017; Norberg, & Boman, 2008; Shosha & Kalaldeh., 2017; Shosha, 2014).

Parents need information not only at the beginning of the diagnosis but continue during childcare (Mediani et al, 2017; Ririnisahawaitun, Prabandari, & Gamayanti, 2015). Research conducted by Lee, Nelson, Thompson and Donovan (2016) showed that the length of time diagnosed is related to information needs. According to Dahnil, Mardhiyah and Widianti's study (2017) that more than half of respondents need information regarding thalassemia, treatment and side effects of therapy. Similarly, Mediani et al. (2017) found that all participants in this study needs a lot information regarding the disease and its treatments. Parents still want the latest information about thalassemia such as new treatment options related to chelation and transplantation (Liem et al, 2011).

Acording to Shosha and Kalaldeh (2017) after one year since diagnosis of disease, perceived social support tends to decrease. The immediate family and people provide supports at the beggining of the diagnosis but from time to time the perceived support begins to decrease (Banovcinova & Baskova, 2014). The longer suffering from the disease makes a person resigned to treatment different from the time span of the sick who still have high expectations of treatment (Satari et al, 2012). Therefore, parents who have long treated thalassemia children need spiritual support because without hope it will cause a loss of enthusiasm and surrender that affects the care of their children (Mediani et al, 2017).

The longer the child is diagnosed, the treatment that has been carried out has been going on for a long time, this makes parents have financial difficulties because of the repeted costs to the hospital (Rijen, Spreeuwenber, Schippers & Groenewegen, 2013; Satari et al, 2012). Research conducted by Rijen, Spreeuwenber, Schippers and Groenewegen (2013) indicated that the longer the duration of illness is associated with lower opportunities to seek economics, especially parents of thalassemia children in this study some of whom have self-employment such as drivers, farmers and labourers whose income is not fixed monthly.

Based on result of multivariate analysis in this current study to see the most influential variables on the needs of parents thalassemic children can be seen from the value of the Odd Ratio (OR) to the variable p-value <0.05. Results of multivariate analysis indicated that there are three highest of the parents' needs were related to professional, emotional and financial needs. Interestingly, the most related to gender needs were information needs, professional support, social and spiritual support.

Literature identifies that parents who have more than one child with thalassemia major complain of financial problems in the family (Shosha & Al Kaladeh, 2017). This happens because of changes in the family economy and impact on the quality of parents in caring for children (Mediani et al, 2017; Shahraki-vahed et al., 2017; Retnaningsih & Dini, 2016). Some parents with low-economy have problems with the cost of hospital transportation for routine care and the problem is escalating as the number of thalassemia children increasing (Mediani et al., 2017; Shahraki-vahed et al., 2017).

Parents who have more than one child with chronic conditions feel their welfare is lower, less optimistic, distress and even depressed (Ekas, Whitman & Shivers, 2009; Saldanha, 2013). For instance, Saldanha (2013) found that parents who have more than one thalassemic child are significantly experienced stress. Similarly, Ismail et al (2013) identified that parents with more than one child with thalassemia faced more problems due to increased physical and mental stress that affect their quality of life.

The next one, gender was also identified as the most related factor to the needs of parents of thalassemic children in this current study. Spending time with friends and talking with parents of thalassemia is the most important thing for mothers compared to fathers. Emotional support is usually obtained from friends and family, while information support involves health professionals (Mediani et al, 2017; Requena, Arnal, & Gil, 2015). This current research is in line with the research conducted by Maunder (2012) which showed that in a multivariate manner, parent gender is the factor most related to parental needs (OR 3.6). Mothers said she wanted to get more support than fathers. As the primary

caregiver, the mother's responsibility to bring her child to undergo treatment for a long time and the mother must also care for other children so that they need a source of support, both emotional, mental and social.

Limited information obtained by parents and poor communication from the nurses causes delays in parents' ability to care for children (Pelentsov, Fielder, Laws & Esterman, 2016). Support of physicians, nurses, psychologists/psychiatrists and nutritionists is the most important source for parents during treatment (Baer, 2013; Requena, Arnal & Gil, 2015). During the treatment is the right time to receive emotional support and information as one of the interventions of health professionals (Mediani et al, 2017: Requena, Arnal, Gil, 2015). It is therefore nurses as patient advocate should more aware about the patients and their family needs. Nurses need to maintain a good communication and provide cointinus supports to their thalassemic patients and their family. Furthermore, it is necessary to provide a consultation room in thalassemic clinic so parents will feel more compfortable and that it can guarantee its privacy and be more open to nurses.

Conclusion

According to findings of this current study can be concluded as follows:

1. The parents' age is related to the needs of information and professional. The gender has a relationship with each domain of parents' needs except emotional needs. Furthermore, education and income factors have a relationship to each domain of parents' needs except professional needs. The number of children with thalassemia major is related to social, emotional and financial needs. The time period of being diagnosed is related to information, social, emotional and financial needs but is not related to professional and spiritual needs.
2. The number of children with thalassemia major is the most related factor to emotional and financial needs, while others: needs of information, professional, social and spiritual are significantly related to the gender of parents.

The results of this study are expected to be input as consideration in providing nursing care to parents who have children with thalassemia.

1) Nurses are expected to play an active role as educators or consultants because most parents of children with thalassemia really need information and emotional support in child care. Therefore, consultation at any time is needed to support the parents' role by providing appropriate knowledge about treatment and care that is being undertaken. In addition, there are specialized nurses who can provide genetic counselling. Nursing services can also provide education on safe contraceptive methods. The implementation of prenatal diagnosis can also be considered in the prevention of thalassemia.

2) Providing spiritual, emotional and financial support to foster a sense of optimism and expectations of parents is needed by empowering parents in finding various sources of support that can strengthen coping strategies, both family and fellow parents who have children with thalassemia and other support groups, and looking for various family financial resources related to treatment, both formal and non-formal institutions such as those provided by the government with the use of BPJS and thalassemia foundations.

For the management of hospitals

It is expected to increase the role of nurses as educators and consultants who are directly faced with every parent who has children with thalassemia by socialising the importance of meeting the needs of parents of children with thalassemia major as an intervention in implement appropriate nursing care so parents can provide caring for their children with thalassemia optimally.

For Further Researchers

Future research is needed to examine other factors in each domain of parents' needs such as marital status, family form, coping, age of the child, and conduct further research by comparing differences in needs between fathers and mothers of school-aged children with thalassemia in helping meet their needs to improve the quality of services, especially pediatric nursing.

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The Effect of Combination of Buteyko Breathing Technique and Walking Exercise on Forced Peak Expiratory Flow In Adult Asthmatic Patients

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Abstract

The Buteyko technique can reduce asthma symptoms, reduce the use of bronchodilators but few and not significant in reducing bronchial responsiveness. Physical exercise that complements breathing exercises in pulmonary rehabilitation can improve pulmonary physiology and control asthma. Physical exercise in the form of walking can improve pulmonary physiology and asthma control by reducing hyperesponsivity reactions and increasing cardiorespiratory endurance. But the combination of these two exercises has never been studied. The objective of this study was to analyze the effect of a combination of Buteyko breathing techniques and walking exercises on Peak Forced Expiration Flow. The design of this study was quasi experimental with pretest-posttest control group design. The location of the study was in the pulmonary clinic of Regional General Hospital of Sidoarjo Regency and Bangil Regional General Hospital in Pasuruan Regency, East Java. Respondents were selected by randomization by simple random sampling. Respondents in this study amounted to 76 respondents. Forced Expiration Peak Flow Data is measured using a peak flow meter. The intervention group was given a combination exercise with Buteyko breathing technique and walking exercise for 8 weeks, 3x per week, 55 minutes every training session. Giving a combination of Buteyko breathing technique and walking exercises using module and video media. FPEF measurements were carried out 3 times (pretest, week 4, week 8). Data were analyzed using SPSS 22 with GLM-RM (General Linear Model-Repeated Measure) ANOVA. The results showed a significant difference in the FPEF rate between before and after 4 weeks and 8 weeks of the combination intervention of the Buteyko breathing technique and walking exercises in the treatment group with ($p < 0.05$) with $p = 0.000$. The findings indicate that breathing exercises and physical exercise through a combination of Buteyko breathing techniques and walking exercise can increase the FPEF rate through the mechanism of increasing CO2 and producing nitric oxide which has bronchodilation effects and through decreasing inflammatory mediators so that it can reduce asthma symptoms. This exercise can be used as an alternative choice in supporting pharmacological therapy to improve FPEF.

Keywords: Asthma, asthma control, buteyko, forced expiration peak flow (FPEF), walking exercise.

Introduction

Chronic respiratory disease, one of them is asthma, is a major public health problem and will remain a challenge for the future but this disease still receives minimal attention and care (Renolleau-Courtois et al., 2014). One of the pulmonary function impairments is Forced Peak Expiration Flow in patients with asthma due to airway obstruction and weakness of respiratory muscles as a result of frequent inflammatory processes, dipsnea and the presence of obstacles in activity (Sahat, Irawaty and Hastono, 2011). The prevalence of asthma in the world is estimated at 334 million people of all ages (Phillips, 2014) and an estimated 235 million people live with asthma and countries with middle to lower income are about 80% of asthma associated with death (WHO, 2018) . In 2025 it is estimated that the prevalence of asthma in the world has increased to reach 400 million people (Masoli et al., 2004). Whereas according to Basic Health Research in 2013 asthma in Indonesia ranks highest for the non-communicable disease category of 4.5% and in East Java the prevalence of asthma is 5.1%.

Pharmacological management of asthma is very useful in the event of an asthma attack. The disadvantage of using long-term pharmacological therapy is that it has side effects especially if it does not control treatment (Ducharme dan Hicks, 2000). Asthma patients who do not do breathing exercises regularly can aggravate the symptoms of shortness of breath that arise during an attack because these patients do not know the correct breathing technique. This can cause ventilation-perfusion imbalance in the lungs. Breathing training and physical activity or exercises that are not carried out by asthma patients have an impact on the weakness of the respiratory muscles so that there is a decrease in lung function, in addition to respiratory disorders and symptoms of shortness of breath will increase and tolerance to activity decreases (Sahat, Irawaty and Hastono, 2011).

Nonpharmacological management can be done through physical activity and breathing training (GINA, 2018). Physical exercises that complement breathing training in pulmonary rehabilitation can improve lung function and control asthma (Juhariyah et al., 2012). Breathing training recommended for asthma is Buteyko breathing technique (Godfrey, 2010). A study conducted by Mohamed, Riad dan Ahmed (2013) showed that Buteyko breathing technique could increase the Forced Expiration Peak Flow and control of asthma. The advantage of Buteyko breathing technique is the control pause which can reduce excessive CO2 expenditure which will regulate breathing through the medulla respiratory center, producing nitric oxide (NO) which has bronchodilating effects. Walking exercises can improve lung function and control asthma by reducing hypersensitivity reactions and increasing cardiorespiratory endurance (Pakhale et al., 2013). The objective of the study is to analyze the effect of a combination of Buteyko breathing techniques and walking exercises on Peak Forced Expiration Flow.

Method

The design of research was quasi-experimental with pretest-posttest control group design. APEP values were measured in the pre-test and post-test twice, on 4th week and 8th week. The treatment group was given a combination of Buteyko breathing techniques and walking exercises for 8 weeks conducted independently at home. Before intervening independently at home, respondents were given a combination training in Buteyko breathin technique and walking exercise using media module training and video.

The steps of the Buteyko breathing technique:

1) Sit up straight and try to position as comfortable as possible, then start breathing normally through the nose.
2) Hold your breath until you first feel the desire to breathe then release the pinch on the nose, then start breathing gently through the nose.
3) Then sit in a comfortable position with your back straight and feet and knees shoulder width apart, then close your eyes. then start breathing normally and calmly through the nose.
4) Then take a break for 20-30 seconds

5) Repeat actions 2 and 3 for 3 minutes.
6) Then take a short rest for 20–30 seconds.
7) Repeat actions 2 and 3 for 3 minutes.
8) Then take a short rest for 20-30 seconds.
9) Repeat actions 2 and 3 for 3 minutes
10) Then take a long rest for 2 minutes.
11) Repeat action 2

The steps of walking exercise:

Walking exercises are carried out at temperatures that are not too cold or hot or between 6-8 o'clock in the morning and are carried out in an environment free of air pollution

1. Warm up for 5 minutes by moving or stretching a group of muscles, such as head muscles, arms, back, and legs
2. Perform 30 minutes of continuous walking or continuous exercise with relaxation or relaxation. Do it walking on a flat surface (Renolleau-Courtois et al., 2014).
3. Walking exercises are done by adjusting the speed yourself to be comfortable and do not get tired or tight.
4. Exercise is stopped if the patient feels breathing too fast and deeply.
5. Training can be resumed if you have a wife and feel comfortable.
6. Cooling down for 5 minutes by stretching slowly in the leg and hand muscles

Researchers taught how to assess exercise tolerance, which is 60–80% maximum heart rate. Maximum heart rate calculation using the 220-age. Assessment of tolerance limits is carried out every 6 minutes during walking exercise.

The exercises which included Buteyko breathing technique were carried out for 15 minutes, the walking exercise for 40 minutes (5 minutes warming up, 30 minutes walking, 5 minutes cooling-down) so that the total exercise was 55 minutes. Exercise was done 3 times a week for 8 weeks. The researcher made a home visit every 1x / week to evaluate the accuracy of the exercise being carried out and the development patient's condition. The potential danger in doing this exercise is the low category because the intensity of the exercise is adjusted to the ability of the respondent. Potential danger that can occur was exercise induce asthma. If exercise induce asthma occurs that is fatigue, tightness, increased breathing effort, cough, the respondent can rest 50-10 minutes and exercise can be resumed if the respondent feels relaxed and comfortable. If the sign and symptom of exercise induced asthma does not decrease or persist with rest, respondents can use pharmacological therapy bronchodilator spray class SABA (Short Acting Beta 2 Agonist), reliever that has been given a pulmonary specialist at the Pulmonary Clinic. Researchers also provided respondents with a small portable oxygen supply that could be used during exercise if tightness arises. Patients in the intervention group and the control group continued to carry out pharmacological therapy from the Lung Specialist doctor at the Pulmonary Clinic Poly Hospital. If with the above procedure the condition of the respondent does not improve, the family can deliver the respondent to the nearest hospital emergency room to get emergency treatment.

The researcher recommended the respondent to fill out the exercise checklist format according to the training schedule. The researcher reminded respondents both by telephone, sms, and social media to do the exercises independently according to the direction of the researcher. The researcher also involved the respondent's family in reminding respondents to do the exercises. The treatment group was conducted at the pulmonary Clinic in the Regional General Hospital of Sidoarjo Regency. All respondents in this study continue to undergo asthma treatment and the selected respondents are asthma patients who have never taken breathing exercises or physical training for asthma patients. The control group was not permitted to do breathing exercises and other physical exercises but they had the right and permission do breathing exercises and or other physical exercises during the study but respondents will be included in the drop out criteria.The control group was conducted at the Pulmonary Clinic in the Bangil Regional General Hospital in Pasuruan Regency.

The population in this study were adult patients with asthma by respirologist in the the pulmonary clinic of Regional General Hospital of Sidoarjo Regency and Bangil Regional General Hospital in Pasuruan Regency by using history taking, physical examination, and spirometry tests.

The sample in this study was taken from the population with inclusion and exclusion criteria, such as:

1. Inlusion criteria
   1) Asthma patients aged 18-60 years.
   2) Stable asthma
   3) Good hearing and vision function
   4) Having a physical and mental health
   5) Patients have never participated in breathing exercises and or physical exercise

2. Exclusion criteria
   1) Smoking patients
   2) Asthma patients who are obese
   3) Asthma in pregnancy
   4) Having other pulmonary diseases such as pulmonary TB, COPD, pulmonary carcinoma
   5) Having hypertension, heart failure, epilepsy, musculoskeletal disorders

3. Drop out criteria
   1) Respondents did breathing exercises and other physical exercises during the study
   2) Respondents did not complete the intervention phase
   3) Respondents resigned for various reasons
   4) Respondents who experienced recurrence during training

The sample technique used probability sampling with simple random sampling. The sample size was obtained through a large sample formula for hypothesis testing different proportions of 2 groups of data pairs (Dahlan, 2013). The sample size in this study was 38 respondents for the treatment group and 38 respondents for the control group. Samples were taken using Measurement of Peak Forced Expiration Flow using a wright standard peak flow meter.

Measurements of Peak Forced Discharge performed using a peak flow meter carried out on the morning before 7 before the use of bronchodilator or 6 hours after the use of bronchodilators, the researcher gave one disposable mouthpiece for one measurement. The stages in carrying out FPEF measurements using a peak flow meter according to Adeniyi and Erhabor (2011), were :

1) Install the mouthpiece to the tip of the peak flow meter
2) Position the patient to stand or sit with his back upright and hold the peak flow meter horizontally without touching or disturbing the marker movement. Make sure the marker is in the lowest scale position (zero)
3) Encourage the patient to breathe as deep as possible, put it in the mouth
4) With the lips close tightly around the mouthpiece, exhale immediately as strong as possible
5) When exhaling, the marker moves and shows the number on the scale, noting the results.
6) Return the marker to zero position and repeat steps 2–4, 3 times, and select the highest value.
7) Compare this value with the previous patient's best value or predictive value.

Statistical tests using the General Linear Model-Measured Measured ANOVA within subjects to determine the difference in Peak Forced Examination values pre-test and post-test in each group. General Linear Model-Measured Measured ANOVA between subjects was used for showing effect of the combination of Buteyko breathing technique and walking exercise on FPEF between treatment groups and control groups (Dahlan, 2014). The researcher did not put covariate (age, sex, education, Body Mass Index) in statistical test.

Ethical approval was issued by the Health Research Ethics Committee (KEPK) of Sidoarjo Regency Hospital with Number: 893.3/0332/438.6.7/2019 and by the Health Research Ethics Team of Bangil Hospital Pasuruan Regency with Number: 445.1/570.2/424.202/2019

Results

Table 1 shows that the age characteristics of respondents in the treatment group were almost partially in the age range of 36–45 years, namely 17 (44.7%) while in the control group more than half of the respondents were in the age range of 46–60 years ie 22 (57.9%)

Table 1 Respondent's characteristic

Characteristic	Treatment Group		Control Group		p
	f	%	f	%	
Age (Years)					
18–25	1	2.6	1	2.6	0.510
26–35	8	21.1	7	18.4	
36–45	17	44.7	8	21.1	
46–60	12	31.6	22	57.9	
Total	38	100	38	100	
Sex					
Male	10	26.3	13	34.2	0.144
Female	28	73.7	25	65.8	
Total	38	100	38	100	
Education					
Junior High School	3	7.9	17	44.7	0.098
High School	13	34.2	12	31.6	
College	22	57.9	9	23.7	
Total	38	100	38	100	
Occupation					
Private	8	21.1	6	15.8	0.574
Enterpreneur	8	21.1	8	21.1	
Civil Servant	15	39.5	9	23.7	
Others (Housewife, student, retiree)	7	18.4	15	39.5	
Total	38	100	38	100	
Body Mass Index					
Underweight: ≤ 18.5	2	5.3	4	10.5	0.267
Normal: 18.6–24.9	18	47.4	13	34.2	
Overweight: 25–29.9	18	47.4	21	55.3	
Total	38	100	38	100	
Family history of Asthma					
Yes	32	84.2	34	89.5	0.504
No	6	15.8	4	10.5	
Total	38	100	38	100	

Table 2 Forced Peak Expiration Flow Data Distribution (%) Treatment Groups and Control Groups

(%)	Treatment Group						Control Group					
	Pre test	%	4th week	%	8th week	%	Pre test	%	4th week	%	8th week	%
80–100	5	13.2	7	18.4	10	26.3	5	13.2	4	10.5	4	10.5
50–80	17	44.7	21	55.3	20	52.6	16	42.1	18	47.4	17	44.7
≤ 50	16	42.1	10	26.3	8	21.1	17	44.7	16	42.1	17	44.7

Total	38	100	38	100	38	100	38	100	38	100	38	100

Table 3 Forced Peak Expiration Flow value (L / min) in the treatment and control groups

Group	Time	Mean ± SD	Average difference	p-value
Treatment	Pre vs 4th week	256.05±109.952	30.79	0.000
	Pre vs 8th week	286.84±103.613	64.21	0.000
	4th week vs 8th week	320.26±101.462	33.42	0.000
Control	Pre vs 4th week	243.03±92.908	0.79	0.337
	Pre vs 8th week	243.81±92.105	0.65	0.590
	4th week vs 8th week	243.68±92.105	0.14	0.864

Table 4 GLM-RM test results (General Linear Model-Measured Measure) ANOVA between subject

FPEF (L/min)	Treatment Mean ± SD	Control Mean ± SD	Difference (confidence interval 95 %)	p-value
Pretest	256.05±109.952	243.03±92.908	13.02 (-33.50-59.55	0.579
4th week	286.84±103.613	243.82±92.610	43.02 (-1.678-87.73)	0.059
8th week	320.26±101.462	243.68±92.105	76.58 (32.286-120.872)	0.001

GLM Test p = 0.000 (post hoc analysed)

. Characteristics of respondents by sex both in the treatment group and the control group were more than part of the female sex, namely 28 respondents (73.7%) in the treatment group and 25 respondents (65.8%) in the control group. In the characteristics of the education level of respondents in the treatment group more than a portion of tertiary education were 22 respondents (57.9%) while in the control group almost half of them had junior high school education as many as 17 respondents (44.7%). On the job characteristics of respondents in the treatment group, almost half worked as civil servants as many as 17 respondents (39.5%) and in the control group 17 respondents (39.5%) worked as IRTs and retirees. The characteristics of respondents based on Body Mass Index (BMI) in the treatment group were almost partially in the normal (18.6–24.9) and obese (25–29.9) categories of 18 respondents (47.4%) and in the control group more than half in the fat category (25–29.9) 21 respondents (55.3%). Characteristics of respondents based on family history who have asthma in the treatment group almost all have a family history that has asthma as many as 32 respondents (84.2%) and the control group almost all have a family history of asthma as many as 34 respondents (89.5%).

Table 2 shows that in the treatment group, the FPEF rate (%) of a small number of respondents was in the green category (80–100% compared to predictive values) which meant that breathing function was good in the pre test as many as 5 respondents (13.2%) and the numbers tended to increase after 4 week of intervention as many as 7 respondents (18.4%), and after 8 weeks of intervention as many as 10 respondents (26.3%). Almost part of it is in the yellow zone category (50–80% compared to the predicted value), which means that the respiratory tract constriction starts at 17 (44.7%), whose numbers tend to rise after 4 weeks of intervention by 21 respondents (55.3%), and after 8 weeks of intervention there were 20 respondents (52.6%). A small number of respondents were in the red category (≤ 50% compared to predictive values) which means that there was a narrowing of the large respiratory tract in the pre test as many as 5 respondents (13.2%) and the number tended to increase after 4 weeks of intervention by 7 respondents (18.4%), and after 8 weeks of intervention as many as 10 respondents (26.3%).

Table 3 In the control group, the FPEF value (%) of a small number of respondents

was in the green category (80-100% compared to predictive values) which meant that breathing function was good in the pre test as many as 5 respondents (13.2%) and the numbers tended to decline after 4 weeks and after 8 weeks of evaluation 4 respondents (10.5%). Almost part of it is in the yellow zone category (50–80% compared to predictive value), which means it indicates a narrowing of the respiratory tract, namely in the pre test as many as 16 respondents (42.1%), whose numbers tend to remain after 4 weeks of intervention by 18 respondents (47.4%), and after 8 weeks of intervention there were 17 respondents (44.7%). Almost half of the respondents were in the red category (≤ 50% compared to the predicted value) which means that there was a narrowing of the large respiratory tract in the pre test as many as 17 respondents (44.7%) and the numbers tended to remain after 4 weeks of intervention as many as 16 respondents (42.1%), and after 8 weeks of intervention there were 17 respondents (44.7%).

Table 3 The results of the GLOV-RM (General Linear Repeated Measure) ANOVA within subject showed that in the treatment group there were significant differences in FPEF before and after 4 weeks of combined training Buteyko breathing technique and walking exercises with a value of $p = 0.000$ ($p < 0.05$) , there were significant differences in FPEF before and after 8 weeks of combined training of Buteyko breathing techniques and walking exercises with a value of $p = 0.000$, there were significant differences in FPEF between week 4 and week 8 with a value of $p = 0.000$. In the control group there were no significant differences in FPEF before and after 4 weeks of evaluation with $p = 0.337$ ($p < 0.05$), there were no significant differences in FPEF before and after 8 evaluations with a value of $p = 0.590$, no difference in meaningful FPEF between week 4 and week 8 with the value $p = 0.864$.

Table 4 The GLM-RM (General Linear Model Measured) ANOVA between subject test results showed there were differences in the APEP value between the treatment group and the control group on one measurement with a value of $p = 0.000$. The difference in the APEP value between the treatment group and the control group occurred in the 8th week measurement with a value of $p = 0.001$.

Discussion

The results showed that a combination of Buteyko breathing techniques and walking exercises affect in increasing FPEF rate (L/ minute). The increase in APEP (L / min) after 4 weeks of performing a combination of Buteyko breathing technique and walking exercises is suitable with research conducted by Utama (2018) which states that The combination Active Cycle Breathing Technique and Buteyko Therapy are given a minimum of 4 weeks of intervention with the frequency 3 times a week increases the Forced Peak Expiratory Flow and asthma control. The increase in FPE occurs simultaneously until the end of week 8. Research conducted by Juhariyah et al., (2012) which provides a combination of physical exercise and breathing exercises for 8 weeks, 5 exercises per week, each 30-minute training session is proven effective in increasing the status functional especially FPEF daily variability.

In asthma, there is an inability to reach the value of normal breathing air flow, especially in expiration, as indicated by the FPEF rate. FPEF is the achievement of maximum expiratory air flow from maximum expiration to assess the presence and severity of airway obstruction (Barnes et al., 2009). Giving physical therapy and breathing exercises is part of pulmonary rehabilitation which is expected to improve functional status, immunological status, and quality of life for asthma patients (Juhariyah et al., 2012). Physical exercise is an important component of comprehensive pulmonary rehabilitation because peripheral muscles in patients with chronic disease not only wasted but also experience changes in muscle fiber distribution and decreased metabolic capacity. Physical exercise improves endurance, improves performance of daily activities, reduces anxiety associated with shortness of breath due to activity (Celli et al., 2004; Mason et al., 2010; Juhariyah et al., 2012).

Hyperventilation that occurs in asthma can reduce levels of CO2 in the blood (Ritz et al., 2008; Prem et al, 2013). Research conducted by Grover and Afle (2014) stated

that Buteyko's breathing technique can increase FEV1 (Forced Expiratory Vital in one second), FEV1 / FVC (forced Vital Capacity) and Forced Peak Expiratory Flow through a control pause mechanism that can increase CO2 concentration which will regulate breathing through the respiratory center in the medulla (Courtney, 2013), nasal breathing that produces nitric oxide (NO) which has bronchodilating effects, reduces breathing volume by using a combination of increased abdominal muscle and relaxation of respiratory accessory muscles, long breath can restore carbon dioxide gas exchange, cerebral vasodilation as a result of oxygen depletion and increased CO2 (Grover & Afle, 2014).

Asthma is a chronic inflammatory disease of the airways characterized by airway obstruction and bronchial hypersensitivity (GINA, 2018). Exercises that can reduce airway hyperresponse and systemic inflammation by reducing the value of IL-6 and monocyte chemoattractan protein 1 (CMP-1) is aerobic (França-Pinto et al., 2015). Aerobic exercise that is easy to do and control is a walking exercise (Hall et al., 2017). A study conducted by Boyd et al., (2012) shows that walking exercises can improve asthma control and cardiopulmonary fitness levels without causing interference with adult asthma sufferers. Physical activity such as walking is classified as aerobic, especially for the muscles of the lower extremities which require an increase in energy requirements so that cardiorespiratory work increases with increasing heart rate and the contents of the stroke (Hall et al., 2017). Other studies have shown that aerobic exercise can increase functional capacity, FPEF, maximum inspiratory and expiratory pressure (Andrade et al. 2014), pulmonary function and VO2max (Abdelbasset et al, 2018). To prevent exercise induced asthma that occurs in physical exercise, adjustments can be made to exercise with the patient's condition and warm up before exercise (Zega, et al, 2011). If physical exercise is used as a habit, it should be easy to do without unwanted side effects to improve fitness which indirectly improves asthma (Zega, et al, 2011).

In the control group there was no difference in the FPEF value before and after the evaluation. This occurs because asthma patients who do not do regular breathing exercises can aggravate the symptoms of shortness of breath that arise during an attack because these patients do not know the correct breathing technique. This can cause ventilation-perfusion imbalance in the lungs. Breath training and physical activity or exercises that are not carried out by asthma patients have an impact on the weakness of the respiratory muscles so that there is a decrease in lung function, in addition to respiratory disorders and symptoms of shortness of breath will increase and tolerance to activity decreases (Sahat, Irawaty and Hastono, 2011).

There were differences in the FPEF values in the 8th week measurement between the treatment group and the control group. This happens because asthma patients who exercise longer, the tolerance to exercise will increase. Increased tolerance for training can increase the value of FPEF (Sahat, Irawaty and Hastono, 2011).

Conclusion

The combination of Buteyko's breathing techniques and walking exercises is a combination of Buteyko breathing techniques and relaxing walking exercises. The findings indicate that breathing exercises and physical exercise through a combination of Buteyko breathing techniques and walking exercise can increase the FPEF rate through the mechanism of increasing CO2 and producing nitric oxide which has bronchodilation effects and through decreasing inflammatory mediators so that it can reduce asthma symptoms.This exercise can be used as an alternative choice in supporting pharmacological therapy to improve FPEF.

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Nurses' Life Experiences As Persons In Charge of Mental Health Programs In Community Health Centers

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Abstract

At present, Mental health issue becomes one of the main issues in public health issues in community health centers such as the complexity of the issues in the work of nurses in charge of mental health programs. The purpose of this study was to explore the nurse's life experience as a person in charge of mental health programs in community health centers. The research design used descriptive phenomenology. The study population was nurses responsible for mental health programs in community health centers, experienced in taking care of people with mental disorders for at least six months, and at least had a Diploma in nursing. The number of participants was determined by purposive sampling technique to obtain seven participants. The experiences of nurses were explored through in-depth interviews, and data were analyzed using the Colaizzi method of analysis. Study results found five themes: (1) feeling burdened by the responsibility for mental health programs; (2) feeling insecure due to the lack of knowledge; (3) feeling there were many barriers and constraints in caring for people with mental illness during the recovery period; (4) hoping to collaborate with relevant government institutions; and (5) being more grateful for caring for people with mental illness. In conclusion, nurses are responsible for mental health programs even though they feel burdened with their workload, but they can still do their jobs because they always have hope and are grateful. The nurses are trained nurses and can collaborate with relevant government institutions.

Keywords: Mental illness, nurse's experience, phenomenology study.

Introduction

The mental health program remains a neglected problem, as evidenced by the small number of funds allocated by the government; therefore, it also lacks attention (Russell, 2010). This condition is reinforced by WHO (2005), which claims that middle and low-income countries get a smaller allocation of funds for mental health programs. The lack of public and municipal concerns regarding mental health issues make an impact on its implementation, irregular monitoring and evaluation, and government campaigns tending to focus on physical illness (Abdulmalik, Kola, & Gureje, 2016).

The results of preliminary studies conducted by researchers through interviews with nurses in charge of mental health programs, in one of the community health centers in Cimahi, namely a nurse with the initial D found the phenomenon that the role of nurses in charge of mental health programs is only recording data and reporting the number of patients visiting community health center and made home visits.

Nurse D said that during her experience, she was confused about the coordination flow when dealing with people with mental illness in the neighborhood. According to her, dealing with people with mental illness required communication with regency and social workers. Besides, the community health center did not provide particular space for consultation and special days for mental health examinations.

The researcher's observation results confirmed this phenomenon during field experience at community health centers. Nurse D was not only responsible for mental health programs but also handled the immunization program at the Maternal and Child Health Center (Posyandu). She recorded data of visiting patients to the community health center and home visitors. However, schedule adjustments, a particular room for a check-up, and a consultation room for mental health service were unavailable at the moment.

Based on the policy regulation of the Minister of Health Republic of Indonesia No. 406 (2009), community mental health is an approach to people-based mental health service. The people are involved actively. This service includes aspects of promotion, prevention, curative, and rehabilitation. Currently, mental health service has changed fundamentally from a closed treatment to extensive treatment and the handling of the mental problem from clinical-individual to productive-social.

The coverage of mental health service in community health center of Cimahi City reaches 1.58%, according to the Health Agency of Cimahi City in 2017. This number is far from the 100% target. In the same year, the number of people with mental illness in 13 community health centers in Cimahi reaches 2.139 people, while those doing check-up and treatment in the same locations reach 3043. The total of patients visit with a mental problem in 2017 reaches 327.344, and the number of patients with an acute mental problem is 492.

Community mental health services require quality human resources. At present, their role is passive and focuses only on people with mental illness. Promotional efforts and prevention in dealing with psychological problems are not holistic because nurses only wait for patients to come and then refer them to the Mental Institution (Suryani, 2012).

Mental health nurses can assist in the recovery of mentally challenged individuals. Suryani (2013) points out that this effort can recover patients by reducing the number of possible recurrences in recovered patients. Also, that recovery was a journey--a lengthy process faced by an individual with chronic mental problems, so that that person can fight for a better life, despite his/her limitations.

In its implementation, mental health nurses have a vital role in the recovery process of people with mental illness in society. Therefore, adequate knowledge about being in charge of mental health programs is more than necessary. What they need, the problems that will arise, and how they solve the problem. This research aimed to explore the experiences of Indonesian nurses as the person in charge of mental health programs in community health centers.

Method

This study used the qualitative method with a phenomenological approach to gain an understanding of phenomena in social-natural contexts by promoting the process of deep interaction between researchers and scientific aspects (Polit & Beck, 2005). However, Patton (2005) states that qualitative research studies real-world settings inductively, producing specific patterns and themes.

Phenomenology was proposed by Husserl (Giorgi & Giorgi, 2008). It has human phenomena as its background and focuses on explaining life experiences and constructing meaning (Streubert & Carpenter, 2007). In this study, phenomenology aimed to get actual meaning through broad involvement of reality (Laverty, 2003 in Lopez & Willis, 2004).

The aim of phenomenology, strengthened by Suryani, Welch, and Cox (2016), is to gain subjective understanding meaning from daily experiences in the language of the individual. Therefore, this research applied phenomenology to reveal the lived experience of a person in charge of mental health in community health centers.

This research conducted from May to August 2018 at seven community health centers in Cimahi city and received ethical approval from the Faculty of Medicine in the field of Health Studies at Padjadjaran University in Bandung with number 571 / UN6.KEP / EC / 2018. The study involved seven participants and conducted in-depth interview. Criteria for participants were as follows; the person was in charge of the mental health program in the community health center, experienced in handling people with mental illness for at least six months, and having a Nursing diploma.

The interviews were conducted for 60 to 90 minutes while taking a break or relaxing at the community health center where the participants worked. Previously, they were informed about the purpose and use of this research. The main question raised by the researchers was "In your opinion, what do you think is required to be in charge of the mental health program during the recovery process of individuals with mental illness in the community health center?" This question was followed by exploring issues to anticipate if the researcher faced obstacles or unanswered questions. The researcher also applied focusing techniques when participants responded aggressively.

This study applied the Colaizzi method for data analysis indicating validation is the result of the participant, meaning that whatever the outcome, it must be in line with the interviewee's intention. According to Colaizzi (1978) in Polit and Beck (2008), and Suryani, Welch, and Cox (2016), there are seven phases to get the essence of each transcription namely, extract relevant statements, formulate meaning from significant statements, organize definitions to be formulated into a series of themes, write full descriptions of the phenomenon, describe the basic structure of the phenomenon, and carry out checking.

During data collecting and analyzing, the researcher applied the bracketing principle to get subjectivity value or neutrality by casting aside understanding and stigma about the observed phenomenon (Giorgi, 2011). The researcher also observed the basic principles of ethics during the time of research, including benefits, autonomy, anonymity, and justice (Polit and Beck, 2010).

Results

The findings of the study showed that the life experience of participants in seven community health centers as the person in charge of mental health programs lasted from 1 to 9 years. All participants were female and Muslims. The age range of participants was from 31 to 41 years old. All participants had pursued the education level of D3 of nursing, and one participant completed the Bachelor of Nursing. The working period for all participants in the community health center lasted about 1 to 13 years. All the participants were married.

Study results found five themes including feeling burdened by responsibility for the mental health program, feeling insecure due to the lack of knowledge, feeling many obstacles and constraints while caring for people with mental illness during the recovery period, hoping to collaborate with

the relevant government institutions, and being more grateful for caring for people with mental illness (Table 1).

In the first theme, all participants revealed that they felt burdened in handling people with mental illness during the recovery process. Three participants said that they were exhausted and irritated when handling them. All these showed that caring for people with mental illness was not an easy task. Participant 4 also had a similar view:

"... The burden is unbearable. Expectations for my workload are too hard to do alone. "(P4.16)

Based on the analysis results and transcripts of participants, the researcher found it essential to raise this theme, not only because all participants have expressed similar opinions but also because it is in line with the purpose of this research, namely to find new insights. Although previous studies have discussed the heavy workload, none has considered the heavy workload faced by the person in charge of the mental health program in handling people with mental illness during recovery in the community health center.

In the second theme, the participants felt insecure due to the lack of knowledge. Two participants revealed that they were not confident when doing assignments. However, another participant told something different, as he felt confident when completing the task because he had participated in the training. Besides, three other participants revealed that they did not know anything during their duties. Four other participants expressed fear during the task, and two participants expressed confusion in carrying out assignments.

The study result showed that the lack of experience of the participants in addressing people with mental illness, family, and society was due to the lack of knowledge about roles and responsibilities while implementing community mental health programs so that participants felt fearful and confused.

Based on the analysis result and repeated readings of participant transcripts, this theme was a new insight with characteristics. If a person lacked knowledge in performing its duties, it would appear as a sense of lack of confidence, fear, and confusion so that it can hinder the implementation of mental health programs. As claimed by participant 2:

"I am almost not confident. I will get a company for a home visit. Otherwise, I am stranded." (P2.20).

However, participant 5 gave a distinct comment because he attended the training. The following was the participant's statement: "Early detection training makes me confident. It improves my performance." (P5.61)

In the third theme, the focus was on obstacles in handling the recovery of people with mental illness. There were three sub-themes in this theme, namely the obstacles in the implementation of references and evacuation of patients, unavailable time and experience handling people with mental illness, and obstacles on the facilities, human resources, and fund. There were three participants with the protagonist view, which was due to the low substance of mental health nurses and the feeling of fear while handling acute patients during the evacuation.

Four participants revealed the lack of a nurse's time and experiences while handling people with mental illness. Another reason was that the workload was too heavy so that they could not explore their work more deeply. This condition became the nurse's obstacle while performing their duties in mental health programs.

Five participants complained about the infrastructure, facilities, human resource, and funds. This was because there were no training programs for patients to get their own money, lack of nurses for mental health in community mental health centers, no male nurses at work, lack of referral hospitals with inpatients, no rooms and special times for people for mental illness counseling, and lack of funds to carry out activities. Participants 1, 2, 3, and seven said as follows:

"Our time collides/clash. We always lack focus. We have to do one program while doing another here.…". (P1.27)

"We cannot explore more deeply; then it becomes difficult. Maybe because we lack experience "(P2.18)

"We do not have any program or training whatsoever that can make our patients make a living on their own" (P3.44)

"Evacuating mentally disabled people? Who wants to fund it? "(P7.83)

In the fourth theme, the focus was on the hope of having good cooperation among

relevant stakeholders to handle people with mental illness. There were three sub-themes as follows: collaboration with patients and family in the process of patient's recovery, the government's institution regarding training and cooperation to handle recovery of people with mental illness, and hoping that the society and public figures support the entire process.

The first sub-theme: expect to work with patients and their families. Four participants expressed their concern so that patients would take medication regularly and get active again. As one of them claimed:
"Of course, I have my hopes. He must be useful for his family and neighbors. He must be independent and productive, even though he still consumes drugs". (P1.22).

The second sub-theme: government institutions organize training programs and good cooperation. One of the participants hoped that health institutions could conduct training programs on mental health. The training required a follow-up after conducting early detection, counseling, training to improve nurses' skills to deal with people with mental illness, training trainers, environment and hamlets about mental health, and empowering people with mental illness. One participant exclaimed:
"We must carry out holistic socialization, starting from training, workshops, and education" (P3.74)

The third sub-theme: the community and community leaders must support the recovery process of people with mental illness as told by all participants. They hoped people would pay more attention to people with mental illness. Participant 4 said:
"We hope that nothing is hidden. There are still people out there who think that mental illness is a kind of curse." (P4.26)

In the fifth theme, the participants felt grateful while caring for mental health patients. Two participants were grateful while caring for people with mental illness. After

Table 1 Schemes of Research Themes: Nurses' Life Experiences as Persons in Charge of Mental Health Programs in Community Health Centers

1st Theme	2nd Theme	3rd Theme	4th Theme	5th Theme
Feeling burdened by responsibility for mental health programs	Feeling insecure due to lack of knowledge.	Feeling there were many obstacles and constraints in caring for individuals with mental illness during the recovery period.	Hoping to collaborate with relevant government institutions.	Being more grateful for caring for people with mental illness
		sub-themes:	sub-themes:	
		1. Barriers to Implementation of Referral and Patient Evacuation	1. Hope can cooperate with patients and families in the recovery process of people with mental illness	
		2. Lack of time and experience of nurses dealing with people with mental illness in the recovery period	2. Related government institutions can conduct training and cooperation in dealing with people with mental illness in the recovery period	
		3. Constraints on facilities, infrastructure, human resources (HR), and funding assistance	3. Communities and community leaders can support the recovery process for people with mental illness	

the in-depth analysis and frequent reading of scripts, this theme seemed quite vital as it showed new insights, though few participants said so. It was very close to religion in Indonesia, and the participant's religious characteristics, of whom the majority are Muslim.

When caring for people with mental illness, participants felt grateful for having better conditions and did not get the obstacles of life like them. Quoted thoroughly: "We are grateful. Thank God that I am healthy, and not being "tested" like those people with mental illness." (P1.40).

Discussion

Feeling burdened by the responsibility for mental health programs

The study result showed that during the assignment, mental health community nurses had a difficult task since they must check patients through many programs (Marchira, 2011). Carayon and Gurses (2008) state that not only community nurses experience heavy workloads but also nurses in hospitals. Nurses have heavy workloads due to four main reasons: (1) increased demand for nurses, (2) inadequate supply of nurses, (3) reduced staffing and increased over time and (4) reducing inpatient length of stay (Carayon & Gurses, 2008).

The nurses' heavy workloads can have an impact on themselves. Edwards, Burnard, Coyle, Fothergill, and Hannigan (2008) confirms that many mental health nurses face stress and fatigue due to the increasing workload, lack of human and financial resources, and increased administrative work, time management, misguided references, do not have enough time for independent learning, and general working conditions. Besides, the heavy workload may impact on nurses' job satisfaction, and the result can contribute to service quality and lack of human nursing resources (Duffield & O'Brien, 2013). Other impacts also affect patients, as confirmed by Lang, Hodge, Olson, Romano, and Kravitz (2004).

Feeling insecure due to lack of knowledge

The healthcare staff in community health centers requires adequate knowledge and skill. Lack of both will impact to the quality service. It is one of their responsibilities to empower patients so that they can tackle problems on their own and maintain a healthy condition (Pinilih, Astuti, & Amin, 2015).

In Gale and Lucette (2011), we found that the gap in the perception of capability and confidence of nurses in recovery-oriented practices are taught academically. Therefore, nursing education should focus more on the model of recovery and its implementation for care delivery. The preparation of adequate resource must be conducted, so that the recovery process can be performed holistically, especially in mental health services. Thus, there will be a healthy society both physically and emotionally (Pinilih, Astuti & Amin, 2015).

Improving nurses' knowledge is essential by attending training on community mental health. This is confirmed by Bangun and Soewadi (2014) that there are significant differences before and after training in mental health programs on knowledge of nurses $p = 0{,}000$ ($p < 0.05$). Besides training, the main requirement for being responsible for mental health programs is to have competence in education. Levin, Hennessy, and Petrilia (2010) claim that the education background of the community mental health nurse must be at least a bachelor's degree, with a specialization in psychology. This is to ensure that the nurses can foster, educate, and advise individuals with mental illness about mental health. However, in this study, the educational characteristic of all participants was a Nursing Diploma. Therefore, the Indonesian government can assign a person in charge with an undergraduate degree as the minimum requirement.

Feeling many obstacles and constraints in caring for people with mental illness during the recovery period

Mental health resources and facilities are still scarce, and it is not possible if the government provides nurses and mental health nurses in a relatively short time. Therefore, one thing to be done is to attend mental health training for healthcare staff in primer services (Marchira, 2011). There are two skills for teaching mental health nurses,

especially on mental and psychosocial health (Ignacio, 2000).

Based on study results, the main obstacle during referring and evacuating patients was the lack of focus when evacuating, while referring that it clashed with other tasks, besides that they were afraid of dealing with male patients. The role of mental health nurses is as a placement co-coordinator, nurses referring clients to their place can accept additional help like shelters, rehabilitation, and long-term life treatment (Huang, Ma, Shih, & Li, 2008).

Factors that can hinder the recovery process of people with mental illness are the people's negative stigma, inadequate human resources, negative attitudes towards patients, lack of confidence, failure to take and resolve problems in critical situations, poor listening skills, symptom-based treatment and not need-based treatment (Happell, 2008).

The negative perception causes many obstacles and problems faced by the community health nurse in handling people with mental illness, namely poor time management and less focus on doing the program and feeling fear of dealing with people with mental illness, and lack of handling experiences. The success of handling people with mental illness during the recovery process can be carried out by refreshing about the role of mental health. Assignment of the nurse' responsibilities in community mental health and people with mental illness recovery toward all nurses can be done through supervision, monitoring, and evaluation to ensure the sustainability of this activity. Junardi, Keliat, and Daulima (2017) confirm in their study that there is a significant relationship between nurses' perceptions of community mental health nursing and stakeholders relevant to the successful implementation of community mental health nursing in the District of Aceh Besar and Kota Banda Aceh.

Expecting to collaborate with relevant government institutions

Collaboration between mental health nurses, other medical staff, and individuals with mental illness aims to provide support shown by mutual respect and trust. Besides, community mental health nurses are a source of support for inspiration and education (Mancini, Hardiman, & Lawson, 2005).

Orchard, Curran, and Kabener (2005) state that interdisciplinary collaboration is a partnership between a team of health professionals and clients with a participatory, collaborative, and coordinated approach to make joint decisions about health. Besides, while building community mental health services, Widowati (2018) emphasizes the importance of the role of various regional stakeholders, from the governor who makes make the policy to the village head who executes it through the village head of Desa Siaga Sehat Jiwa (Healthy Soul Alert Village). The responsibility of the health agency includes budget planning, providing medicines, conducting training led by psychiatrists and psychologists and social workers from mental hospitals and mental health nurses.

The performance of community mental health nurses (CMHN) involves families, mental health figures, community leaders, and religious leaders. Sari and Fina (2017) support family involvement in the performance of community mental health nurses, claiming that there is a significant relationship between family support and prevention of relapse in schizophrenic patients (p-value 0,000), the relation between family emotional support and relapse prevention in schizophrenic patients (p-value 0.0005), relationship between information support from family and relapse prevention in schizophrenic patients (p-value 0.002), relationship between family instrumental support and schizophrenic prevention (p-value 0000), and relationship between family assessment support and schizophrenia (p-value 0.014).

Farkhah, Suryani, and Hernawaty (2017) claim, the most dominant factor in the occurrence of a patient's relapse is the caregiver's quality of life. Therefore, nurses have active roles in improving the quality of caregivers and emphasizing the importance of a caregiver support group.

Being more grateful for caring for people with mental illness

Being grateful means realizing everything

we have as God's blessings (Yusuf, Nihayati, Iswari, and Okviasanti, 2016). This is a feeling of being fascinated, grateful, and appreciating life (Emmons & Shelton, 2005). Also, Watkins, Woodward, Stone, and Kolts (2003) claim that it shows individual characteristics that are full of emotions, respect for others, and simple things.

According to Listiyandini et al. (2015), an individual has emotional and interpersonal privileges of being grateful. They can improve coping skills, whether they realize it or not, by seeing at and feeling sufferings as something positive. Besides, McCullough, Tsang, and Emmons (2004) claim that grateful people have a positive coping mechanism, which can be useful in dealing with life's difficulties, seeking support, interpreting experiences from other angles, and solving problems.

Harbaugh and Vasey (2014) elaborate that the practice of gratitude can reduce symptoms of depression and stress in the workplace. This is supported by Ningrum (2016), who states that the practice of gratitude is beneficial to reduce the stress level of employees.

Conclusion

Based on the study results and discussion about the life experience of the person in charge of the mental health program for people with mental illness who are in the recovery process, the conclusion is that there are five themes and three sub-themes which emerged as new insights. Being the person in charge of the mental health program is a difficult task; nurses are often embarrassed due to lack of knowledge, and various obstacles in caring for people with mental illness recovery. However, they hold on to their expectations and are consistently grateful that the program can run until these days.

The researcher proposes five suggestions: the first is for the person in charge of the mental health program: to sharpen their knowledge and attend mental health training, collaborate with various stakeholders to deal with people with mental illness during recovery, and be grateful for their job. The second is for patients: to consult to community health center regularly, take medicines, and be active at home, then for their families, to support the patient to take drugs daily, take good care of them, and motivate them to do activities at home or in the community.

The third is for formal institutions such as community health center, hospitals, health services, social services, TRC, and the government. The researcher suggests that community health center provides more human resources, preferably male to help handle people with acute mental illness, reduces the workload of the person in charge of the mental health program, provides SOP about people with mental illness handling, and provides a place and time for medication and consultation for people with mental illness. Moreover, it is also suggested that hospitals cooperate better in terms of evacuation, referrals, and dealing with people with acute mental illness, providing communication channels about patients from hospitals to all parties at community health center to check-up patients.

The suggestion is that health institutions and the government make a Bachelor's degree or competence in mental health as a minimum requirement for nurses in charge of mental health programs. Moreover, they are expected to conduct training on how to be grateful and about mental health for nurses, community leaders, religious leaders, and the community. The fourth suggestion is for the community and community leaders such as environmental, neighborhood and regency cadres, together with religious leaders to enhance cooperation in handling people with mental illnesses and removing the negative stigma toward them.

The fifth suggestion is for the development of Nursing Studies so that students understand the concept of community mental health nurses and people with mental illness recovery so that they can improve their practices in their community. Finally, the sixth suggestion is for further research; to conduct a comprehensive study on the knowledge of community mental health nurses about people with mental illness recovery, barriers, and success factors in the improvement of people with mental illness, and the importance of being grateful.

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Nursing Modality Therapy (Spiritual Deep Breathing) Resolve Student Distress

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Abstract

The condition of nursing faculty students has many academic tasks such as attending classes, taking exams, socializing, adjusting to fellow students with different characteristics and backgrounds, developing talents and interests through non-academic activities. This condition causes students to not be able to manage time well so that they experience distress. Quasy experiment research used two groups pre-post-test design. The sample included 15 control groups and 15 treatment groups. The sampling technique uses simple random sampling. Research variables include spiritual deep breathing therapy and distress rate. The instrument uses depression anxiety stress scale-42 (DASS-42) in the form of a Likert scale. This type of unfavorable questionnaire contains 42 questions. The spiritual instrument deep breathing therapy is about 20 minutes a day for seven days. Statistical test using Wilcoxon signed rank test against both groups. There was a significant effect on the treatment group (p-value 0.001). In the control group there was no effect (p-value 0.263). Distress conditions in a person can be overcome with one therapy such as spiritual deep breathing therapy. Spiritual deep breathing therapy as a therapy for nursing modalities can optimize oxygen demand for cells that are distressed, blood flow to the muscles decreases otherwise blood flows to the brain and skin increases so as to provide a sense of warmth, comfort and calm.

Keywords: Distress, nursing modality therapy, spiritual deep breathing therapy.

Introduction

The condition of students Faculty of Nursing, University of Jember have the academic demands such as attending class, obeying the exam, socialize, adapt to the characteristics and fellow students of different backgrounds, develop their talents and interests through non-academic activities. Students cannot manage time well so experiencing distress.

The prevalence of distress in students in North America by 100 respondents (38%) (Shannone, 1999). The prevalence of distress in students in the UK as many as 165 respondents (31.2%) (Firth, 2004). The prevalence of distress in students in India as much as 180 respondents (34%) (Kumar, 2011). The prevalence of distress in students in Saudi Arabia of 494 respondents (57%) and in Malaysia as many as 396 respondents (41.9%) (Sherina, 2004). The prevalence of distress in students in Indonesia in University of Jember Health Services Unit as many as 79 respondents (75.9%) (Wahyuni, 2015). The prevalence of distress at Faculty of Medicine University of Jember students categorized as moderate stress were 107 respondents (57%) (Evanda et al., 2014).

The cause of distress among other demands of academic life, social, and personal (Dyrbye et al., 2006 in Jaisoorya et al., 2017). Lots of activities and tasks, environmental changes, loss of social support, academic pressure, relationships with peers, and financial problems into soulmate factor causes distress (Azzahra, 2017). The bad interpersonal relationship is the most common stress factors (Hashimoto, 2012). Factors that cause stress, according to research Saam (2006) of the Faculty of Medicine students of Riau are personal factors, family, school, and community. Personal factors include the inability to set the time, the monthly money runs out, exhausting themselves to study, friends are too often comes to renting, pain does not go away, trouble with friends, mood changes frequently, breakup, lack of affection from a lover, and breakup. Family factors include parents divorced, unfettered, parents quarreling, lack of affection and parents do not meet the wishes of children. Factors include the campus and piling too many tasks, to study for a full day, yet have lecture materials, problems with teachers, professors do not understand the explanation, a full exam for one week. Community factors include isolation, protests or criticism, receive discrimination and bullying, the environment is not conducive.

Impact distress resulting in decreased concentration and school performance because burdened by campus and social life. Interpersonal stressful experiences lead to serious problems. Mental health problems like depression and anxiety cause stress interpersonal (Hashimoto, 2012). Severe distress cause auditory hallucinations that disrupt the central nervous system, stimulates the negative voices even endanger yourself and others (Ellet, 2017). Distress detrimental impact on physical and mental health cause spiritual distress individuals and families (Dewi, 2014). Decreasing the concentration of student learning therefore burdened campus and social life, as well as poor social interpersonal relationships. Another impact of distress such as hypovolemic shock, impaired tissue perfusion, energy use disorders, delayed wound healing, and the rate of metabolism disorders (Winkler et al., 2008).

One solution is to give students overcome distress spiritual deep breathing therapy. Therapy appropriately and regularly can give maximum results. Application of nursing modality therapy is useful for improving the quality of life and improve health (Sepdianto, 2008).

Method

The study was quasi-experiment using two group pre-posttest design. The study aims to determine the distress of students before and after giving nursing modality therapy spiritual deep breathing. Measuring the level of distress (pretest) in the treatment and control group respondents then provide intervention spiritual deep breathing therapy and re-measure the level of distress (posttest) in the treatment and control group respondents.

Total sample each treatment group and control as many as 15 respondents. The research using simple random sampling techniques. Inclusion criteria include: 1)

gender to male and female; 2) aged 18-21 years; 3) co-operative; 4) willing to become respondents; 5) actively enter the class; 6) can be measured stress level.

Place of research at the Faculty of Nursing, University of Jember August 2017.

The study used an instrument nursing modality therapy spiritual deep breathing. Adopting and modifying of research Benson (1974), entitled "your innate assets for combating stress" with spiritual therapy. This technique can relieve pain, insomnia, anxiety, and stress. Implementation of the therapy duration of 20 minutes per day for seven days.

Instruments distress using a questionnaire depression anxiety stress scale-42 (DASS-42) and has received permission from the author. The DASS-42 questionnaire is adapted from Matthews (2016), entitled "distress". Scale questionnaire Likert scale. Question unfavorable types. amounted to 42 of the questions. Rate each question: 1) value of 0 (no or never); 2) the value of (according to experienced up to a certain level, or sometimes); 3) value of 2 (common); 4) value of 3 (very appropriate with experienced, or almost all the time). The final assessment: 1) the value 0-14 (normal); 2) value of 15-18 (mild stress); 3) value of 19-25 (moderate stress); 4) value of 26-33 (stress); and 5) the value of ≥34 (very severe stress).

Data collection and processing stages include: 1) conduct research and fill permit informed consent as a sign of willingness; 2) measuring the level of distress (pre-test) on the first day; 3) provide nursing intervention modality therapy spiritual deep breathing for 20 minutes on the first day until the seventh; 4) measuring the level of distress (posttest) after administration of nursing modalities therapy spiritual deep breathing on the seventh day; 5) analyze the research data using the Wilcoxon signed rank test with $p < 0.05$ towards treatment groups and control groups (Nursalam, 2008).

This study applies the ethics of research include: 1) research consent form; 2) anonymous; 3) safety and comfort; 4) confidentiality; 7) justice (Potter & Perry, 2006).

Results

Table 1 Characteristics of Respondents Based on Gender, Age and Heart Rate

No	Respondent Characteristics	Treatment		Controls	
		f	%	f	%
1	Gender				
	Female	8	53.33	7	46.67
	Male	7	46.67	8	53.33
2	Age				
	Young	10	66.66	12	80
	Adults	5	33.33	3	20
3	Vital signs				
	1. Blood Pressure				
	Normal	15	100	15	100
	Hypotension	0	0	0	0
	Hypertension	0	0	0	0
	2. Heart Rate				
	Normal	15	100	15	100
	Tachycardia	0	0	0	0
	Bradycardia	0	0	0	0
	3. Respiratory Rate				
	Normal	13	86.67	14	93.33

Tachypnea	2	13.33	1	6.67
Bradypnea	0	0	0	0
4. Temperature				
Normal	10	66.67	14	93.33
Hyperthermia	3	20	0	0
Hypothermia	2	13.33	1	6.67

Test Results Wilcoxon Signed Rank Test

Table 2 Results of Wilcoxon Signed Rank Test in Treatment Group

Category	n	Median (min-max)	mean ± SD	p
Distress before the intervention	15	15 (7-27)	4.998 ±15.53	0.001
Distress after intervention	15	6 (4-14)	6.53 ± 2.850	

Table 3 Results of Wilcoxon Signed Rank Test in Control Group

Category	n	Median (min-max)	mean ± SD	p
Distress as a pre-test	15	13 (3-26)	6.307 ±13.07	0.263
Distress when the post-test	15	15 (5-23)	13.87 ± 5.330	

Table 4 Results of Mann Withney U Test

Category	n	Median (min-max)	p
Control Group	15	8 (3-26)	0.001
Treatment Group	15	15 (8-23)	

Characteristics of Respondents

Table 2 shows the mean of 15.53 distress before the intervention and after intervention by 6.53. The mean distress declined by 9.00. Results of the Wilcoxon test showed p=0.001 (p<0.05) means that there is a significant difference between prior to giving spiritual deep breathing therapy and after being given spiritual deep breathing therapy.

Table 3 shows the mean of distress as a pre-test of 13.07 and the current post-test of 13.87. The mean distress increased by 0.8. Results of the Wilcoxon test showed p=0.263 (p>0.05) means that there is no significant difference between the current pre-test to post-test time.

Table 4 shows results of Mann whitney statistical test between post treatment group and post control group showed ρ = 0.001 because the value of ρ <0.05, it was concluded that there was a difference in the administration of spiritual deep breathing therapy between treatment and control groups.

Discussion

Distress in Treatment Group

Table 2 shows a significant difference (p=0.001) were significant distress among college students before and after giving of spiritual deep breathing therapy. Looked at the results of the average value of student distress before giving treatment 15.53. After giving treatment mean value of student distress becomes 6.53. There is a decrease in mean values distress difference between pre-test and post-test of 9.00. This means giving spiritual deep breathing therapy effect on student distress.

Research in the Southern Illinois University School of Medicine, the USA in 2004-2006 proved that distress affects the performance of students from both academic and non-academic. Giving techniques stress reduction regularly and consistently to students in some medical schools can help overcome academic problems due to stress. The results of the study reported that the perception of anxiety, nervousness, doubt, and loss of concentration was decreased (Paul, 2007).

Research in Japan proves the use of techniques deep breath as a method to reduce tension and improve mood. Another method uses relaxation techniques of yoga and progressive muscle relaxation (Hayama, 2012).

Nurhadi & Nursalam study (2003) that the spiritual guidance of a positive impact on stress reduction clients who are hospitalized and clients with a terminal illness. Stress reduction impact on increasing the immune response so that clients can minimize secondary infections.

Research Valentina (2016) that there are significant deep breathing relaxation techniques with improved mood thereby reducing the level of stress in terms of evaluation self-reported as well as heart rate and salivary cortisol levels.

Harris Research & Coy (2003) that students can use breathing relaxation techniques to calm down during the exam. Students who meditate use breathing relaxation techniques showed significant improvement in academic achievement. Research Adams (2004) that the relaxation techniques helpful respiratory symptoms ward or response light flight associated with anxiety and distress include increased heart rate, respiration, blood pressure, muscle tension, and discomfort.

Use of the effect of relaxation therapy trivial but with the advantages of the technique that is fast, simple and involves minimal resources into appropriate solutions in all circles. Research shows this therapy is easy to learn (<10 minutes) and effectively used by all ages, especially children 5 years old. This therapy is easier to apply than the anti-stress therapy techniques others although the main obstacle is the inability flew children's describing health problems (Valentina, P., & Blandini, M. (2016).

Respiratory effects in the student sample show taking deep breaths can help reduce feelings of anxiety and stress, improve performance and concentration. Deep breathing can also reduce some symptoms of Parkinson's disease, epilepsy, posttraumatic stress disorder (PTSD), depression, hypertension and other chronic diseases. Breathing in is also useful as a simple motor skills disabilities rehabilitation (Valentina, 2016).

Based on the data characteristics of the respondents (pulse) that takes 10-20 minutes a day to achieve relaxation against stress. It is important in the relaxation program are 1) the repetition of a word, sound, prayer, thought, phrase or muscle movements; 2) re-focus and concentrate to repeat when the mind is disturbed. Evidently, if the pulse becomes stable because exfluks Ca2 + which make increased vascular permeability that gives the effect of comfortable, relaxed, and calm.

Data characteristics of the respondents (respiratory rate) that appear regular or irregular rhythm in the treatment group. This suggests that there is feedback response in the hypothalamus secrete ACTH which will lower cortisol production, thereby reducing the striated muscle contraction lungs that provide the quiet and comfortable effect.

Conclusion

There is a decrease in distress before and after nursing modalities therapy spiritual deep breathing in the treatment group. No decrease in distress as a pre-test and post-test in the control group.

Nursing modalities therapy spiritual deep breathing is a technique that combines a breath in the spiritual aspect of the method that begins the prayer so as to calm the mind and have a positive impact and a sense of comfort to the body cope with stress. The benefits of deep breathing spiritual therapy is indeed not directly felt in all therapy but it should be continued so that it will provide a fresh effect, comfortable, relaxed in students so that they can improve learning achievement. Need the active participation of students to use these therapies independently so that decrease stress levels are visible.

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Tera Gymnastic Effective For Patient With Hypertension

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Abstract

Hypertension is a cardiovascular disease globally. Hypertension is remains silent killer, the clinical strategy to focusing on new and improved treatments is exercise. Tera gymnastics is a physical and mental exercise, combining the movement of body parts with breathing techniques and rhythms through the concentration of thought that is carried out regularly, harmoniously, correctly and continuously, Physical activity can reduce high blood pressure. Some study showed Regular physical activity is an effective intervention with respect to these factor, decreasing mortality rate for cardiovascular disease and all cause of disease in hypertensive patient. Gymnastic Tera exercise can help to control metabolic variable related to hypertension. The study was use quasy experimental design with one group pretest-posttest. The study was conducted in Puskesmas Pasundan Garut. Sampling in this study is subjects that is criteria patients has hipertension with 8 weeks treatment so will take methode of concecutive sampling with 15 respondents for intervention group and 15 for control group. The sample were age 30-55 years. The Intervention was gymnastic tera exercise. The Blood pressure function was evaluated before and after the training period. The data were analyzed by using t-test paired. The result showed a significant difference before and after tera gymnastic exercise in patient with hypertension I (p=000.0). Result of systolic blood presure when in mean SD pretest is 146.00 higher than post test is 136.00 in intervention group. The tera gymnastic exercise conditioning program achieved effect in this population. The reduction of blood pressure after exercise is of great clinical relevance. The increased risk of physical inactivity in controlling hypertension in our study suggest that general practitioners must be in the habit of prescribing practice of physical exercise. Physical activity has been shown to have beneficial effect on blood pressure. patients are followed up regularly to confirm that they are adhering to the management plan and the blood pressure targets.

Keywords: Exercise, gymnastic tera, hypertension.

Introduction

Hypertension is one of the most deadly chronic diseases in the world by contributing 9.4 million mortality every year (WHO, 2013) in Kharisna, Ropi, and Rahayu (2018). High blood pressure is the risk of risk cardiovascular disease (CVD) and all cause of mortality. Data from the World Health Organization (WHO) in 2015 showed that around 1.13 billion people in the world have hypertension, Meaning that 1 in 3 people in the world is diagnosed with hypertension. The number of people with hypertension continues to increase every year, it is estimated that in 2025 there will be 1.5 billion people affected by hypertension, and it is estimated that every year 9.4 million people die from hypertension and its complications. (Depkes.go.id). Hypertension is risk factor for more cardiovascular heart disease. High blood pressure condition increase risk of heart attack, hearth failure, and, sudden cardiac death (Arima, 2011). Patient often fail to recognize essensial high blood pressure as a disease until it is identified by a physician. If we successfully control blood pressure with a healthy lifestyle, we might avoid, delay or reduce the complication from hypertension. Reducing high blood pressure can decreased cardiovascular by achived by non-pharmacological. Lifestyle change should be the initial approach to hypertension management and include physical exercise (Gupta & Ghupta, 2010). Exercise training has an important role in the prevention and treatment of high blood pressure.

Exercise is the key of management hypertension. However, the overall low of studies and lack of data about exercise. Some people who incapable, weak, and sickly person cause them to treat the helpless human, so that all activities are very limited. This condition is exacerbated by the lack of time, place, and opportunity for their doing activities to fill the rest of his life. Therapy of hypertension focuses on pharmacology. Those therapy are affecting on physiological mechanism. For holistic approach, hypertensive people need combined the conventional therapy with modalities therapy. One of modalities therapy for reduce high blood pressure are by exercise. Exercise is recommended as one of lifestyle intervention in the treatment of hypertension by many guidelines (Peri-Okonny, Fu, Zhang, & Vongpatanasin, 2015). Moderate intensity aerobic one of the management for hypertension. Aerobic has direct effect of blood pressure. But there insufficient evidence about the safety and efficacy of isometric resistance training to recommended it. But not all hypertension patients are allowed this exercise. Aerobic has been proven and prevent hypertension for help management hypertension stage 1 (Ghadieh & Saab, 2015). Another exercise for hypertensive patient not only moderate intensity aerobic, but also tera gymnastic. Therefore, the people need to maintain the condition of his body by exercise, one of them is tera gymnastics. Tera gymnastics is light, gentle and easy for all ages.

Tera gymnastics is a physical and mental exercise, combining the movement of body parts with breathing techniques and rhythms through the concentration of thought that is carried out regularly, harmoniously, correctly and continuously (Eriyanti et.al., 2016). Continuous exercise training is the type of physical activity most frequently recommended to hypertensive subject. Regular physical activity is an effective intervention with respect to these factor, decreasing mortality rate for cardiovascular disease and all cause of disease in hypertensive patient (Guimaraes et al., 2010). In addition tera gymnastic help to control metabolic variable related to hypertension.

Training has an important role in the prevention and treatment of hypertension (Giolac et al, 2010). Exercise training is the type of physical activity most recommended to hypertensive subject. Training for hypertensive patient has many benefit, such as helping patient to their physical activities before the disease, optimizing body physical, and preventing complication. However, the rate about tera gymnastic participation both worldwide and Indonesia still low. There are not many patient actively participate. This study aims to determine the influence of tera gymnastics on blood pressure in hypertension patients and to demonstrate the effect of physical activity on controlling blood pressure So the benefit of this research is to know how big the benefits of tera gymnastics

against blood pressure hypertension patients. Tera gymnastics gives effect to the heart system and blood gain in improving its ability. More blood vessels (small blood vessels) are built in active tissue to regulate food and oxygen supply, and exercise consumes more in the system and inhibits fat reserves in blood vessels, thereby reducing the risk of thrombosis Hardjana (2000) in Eriyanti et al. (2016).

Method

The study was quasy experimental design with one group pretest-posttest. Sampling by means of concecutive sampling with 15 respondents for intervention group and 15 for control group. Inclusion criteria : Patients with stage 1 hypertension, kooperatif, willing to be respondent, there is no history of diabetes, had quit smoking less than 3 months. The sample were age 30–55 years, because after the age of 30 years there is a 1% decrease in heart pulmonary fitness every one year of age which is an indicator of oxygen consumption by the heart and lungs, the pulmonary heart fitness will decrease by 35%. The Intervention was tera gymnastic exercise. The study was conducted in Puskesmas Pasundan Garut with the most incidents of hypertension. All patient attended an exercise training programmed three time a week for a period of 8 weeks. The Blood pressure function were evaluated before and after the training period. Blood pressure monitoring was performed at base line and follow up with .The data were analyzed by using t-test paired to compared two group, group intervention and control group. Participants were instructed to practice their gymnastic tera daily throughout the 8-week intervention phase. During screening sessions blood pressure was recorded posttest and pretest for total 2 measurements per session. The blood pressure recorder was calibrated using in sphygmomanometer.

Results

That population has met the inclusion criteria of 15 person (X1 = 15, X0 = 15). Research subjects were selected with high blood preasure. Tera gymnastic exercise was associated with a significant reduction in mean systolic and diastolic blood pressure. Characteristic respondent in this research is

Table 1 Results of Homogeneity Test by Age Tera Gymnastic Group and Control Group

Variable	Gymnastic Tera Group		Control Group		P value
	n=15				
	F	%	F	%	
35–40	4	23.7	5	33.3	0.525
40–55	11	76.3	10	66.7	

Tabel 2 Average Differences of Pretest and Posttest Results Blood Pressure Hypertension Between Tera Gymnastic Group with Control Group

Group	N	Prettest Mean (SD)	Posttest Mean (SD)	P-Value
Intervention Group	1			0.001
Systolic	5	146.00 (0.114)	136.00 (0.007)	
Diastolic		91.02 (0.108)	89.20 (0.002)	
Control Group	1			
Systolic	5	145.00 (0.118)	144.20 (0.101)	
Diastolic		91.00 (0.110)	90.02 (0.108)	

patients with hypertention with 1st grade .

The two group had similar age, office blood pressure and current medication distribution. And the 30 subject completed the protocol. This is proven by the value of p value that was bigger than α (0.05).

Based on the table above, it can be explained that the average difference of blood pressure between group of tera exercise is p-value = 0.001 (α <0.05), this can be interpreted there is difference between group of control after given exercise. From the description of the research results obtained the average. The reduction in blood pressure have been shown to occur after only 4 weeks in individuals with elevated high blood pressure. The result showed a significant difference before and after tera gymnastic exercise in patient with hypertension I (p=0.000). That tera gymnastic exercise decrease systolic and diastolic blood pressure.

Discussion

This study shows that gymnastics can produce effects on decreasing blood pressure. Effects of decreased blood pressure in hypertensive patients on normotensive people. Therefore, exercise contributes to the control of blood pressure in hypertensive patients and is likely to contribute to the prevention of hypertension in normotensive subjects. Aerobic is an effective method to lower blood pressure and improve other cardiovascular risk factor (Hansen et al, 2011). Tera exercise group is more effective than control group, its significant different before and after exercise. gymnastics tera can improve fitness in the elderly (Nursalam, 2009). Low exercise activity physical as gymnastics, also can cause hypertension due decreased cardiac output pumping to the heart becomes more reduced.

The frequency relationship of tera gymnastics against systolic blood pressure shows a strong relationship. High blood pressure is systolic pressure of more than 140 mmHg and diastolic blood pressure more than 90 mmHg. Hypertension is a multifactorial disease which arises due to various interactions factor. Blood pressure will increase after aged 45 - 55 years, the walls of the arteries will be thickening by the presence accumulation of collagen substances in the muscle layer, so that blood vessels will gradually narrowed to rigid. Enhancement age will cause some changes physiologically, there is an increase peripheral resistance and sympathetic activity.

Blood pressure and heart rate both rise when exercise. It can lower blood pressure and heart rate rest. This is because training improve the health of heart and blood pressure allowing cardiovascular system to function efficiently. When exercise heart's contraction also increases while exercising, there more blood is pumped with each beat. Both groups reported excellent adherence to the task instructions.

In this study the result of tera gymnastic is significant (p=0,000) can improved lower blood pressure patient with hypertension. Tera gymnastics prioritizes gymnastics breathing, where the movements synchronized with meridian patterns with dots health according to the theory of acupuncture. If gymnastics is well done and true as well regularly in the long term, have an impact positives that can help accelerate healing prevents illness as well. That sympathetic nerve activity is reduced when subject breathe slowly. Physical activity carried out by programmed, measurable, regular and routine can reduce the potential for stress, other than that also able to maintain one's physical fitness (Sukadiyanto, 2010). Tera gymnastics contains two elements therapy physical activity and relaxation. Physical activity is obtained through components of stretching and joint motion whereas relaxation is obtained through the respiratory movement that exists in Tera gymnastics (Sari, 2011). the nurses in improving self-care agency of hypertension patients must concern about patient lifestyle and help patient to modify their lifestyle (Kharisna et al., 2018).

Risk factors that can be changed in patients hypertension is the same as recommended for patients other hypertensive patients such as reduction weight, sodium restriction on food, increased physical activity and reduced intake alcohol. This factor not only reduces the pressure blood but also have a positive impact against the risk of cardiovascular disease. This tera gymnastic exercise is good

physical activity for patient with high blood hypertension.

The tera gymnastic exercise conditioning program achieved effect in this population. Research from Lewa, Pramantara, Rahayujati (2010) showed that the elderly are not active physical increases the risk of HST events of 2.33 times greater than with the elderly who are physically active, and in a manner statistically significant (p-value = 0.003). Investigation of the role of physical exercise regularly to decrease arterial strain center due to age. They found that aerobic exercise and Resistance can regularly inhibit reduction of arterial compliance result increase in age and restore level parallel to the arterial level of age compliance middle-aged. Impact of pressure drop blood because of this sport may be caused by diminished arterial stiffness.

Repetitive exercise with high intensity, the central nervous system will stimulate the muscles and as many muscle fibers as possible resulting in faster contraction, strength and higher endurance. Human body require energy to maintain survival of the body's organs, the process of replacing damaged cells and activity daily. Energy can be defined as capacity or ability to perform work. Work is defined as a style done at a certain distance.

Conclusion

The reduction of blood pressure after exercise is of great clinical relevance. Which is compatible with observational studies that concluded that exercise and fitness are inversely related to the later development of hypertension. Although there are fewer data on resistance training, the data suggest that resistance training of moderate intensity is able to reduce blood pressure. Various approaches have been used to increase physical activity and maintain adherence. Our results support the recommendation that exercise is a cornerstone therapy for the prevention, treatment and control of hypertension .The increased risk of physical inactivity in controlling hypertension in our study suggest that general practitioners must be in the habit of prescribing practice of physical exercise. Physical activity has been shown to have beneficial effect on blood pressure. patients are followed up regularly to confirm that they are adhering to the management plan and the blood pressure targets.

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Relationship between Workload Performance and Job Satisfaction

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Abstract

In Pakistan's public health care delivery system, charge nurses hold a very challenging position to perform their workload. They have to work very hard to accomplish nursing and non-nursing care tasks which are imposed on them by the system. Overstretching of workload deprives them from concentration which is badly needed for their performance and this creates dissatisfaction which negatively impact on the quality of nursing care. As a result, this study intends to analyses the relationship between workload performance (WLP) and job satisfaction (JS). This correlation study involved 105 charge nurses in Nishtar Medical College and Hospital Multan Pakistan recruited by convenience sampling. Nurses' WLP were collected by using self-developed instrument, and JS were collected by using modified Spector 1985. The collected data were analyze descriptively (mean, SD, frequencies, percentage) and inferentially (Pearson's correlation). The results suggested that nurses' WLP (average time consumption) in the morning (93.83%) and evening shift (95.63%) were higher compared with night shift (70.69%). Additionally, the proportion of time consumed in the morning and evening shift were higher on nursing care activities (Morning = 57.10%, Evening =52.1%) rather than non-nursing care activities. Oppositely, in the night shifts nurses consumed more than half of their time in non-nursing care activities (55. 66%). Charge nurses observed on moderate level of job satisfaction (mean = 38.6, SD = 5.42). There was no statistically significant correlation between nurses' job satisfaction and workload performance (p =.137). The findings conclude nurses' high workload and moderate level of job satisfaction and no statistically significant correlation between both. The results suggested that, it is important for hospital management to adopt some better strategies in order to improve WLP and JS.

Keywords: Job satisfaction, nursing & non-nursing care activities, workload performance.

Introduction

Nurses are the key care providers in hospitals, they can significantly influence the quality of care provision and patient outcomes. Consequently, hospitals' chase of high-quality patient care is based on their ability to engage in some activities that will ensure use of nursing resources effectively (Stokowski, 2009).

According to Lunden (2014), the role of nurses in transforming healthcare is vital in promoting and restoring patients' health through completing the nursing process. This is achieved with nurse collaboration with physicians and multidisciplinary team members to providing physical and psychological support to patients and their families, therefore ensuring job satisfaction, which is a major element for measurement of nurses' workload performance. Draper, Felland, Liebhaber, and Melichar (2008) say "Nurses care for patients in a multitude of ways, and can move into leadership roles in clinics and hospitals with responsibility for overseeing other health care team members. Where they provide hands-on care to patients by administering medications, managing intravenous lines, observing and monitoring patients' conditions, maintaining records and communicating with doctors".

Snyder, Medina, Bell, and Wavra (2004), asserted that Nurses have to determine the scope of nursing practice, with the responsibility and accountability of provision of nursing services and provide basic patient care that includes but is not limited to taking vital signs, dressing changes, performing phlebotomy, and assisting with activities of daily living. In Pakistan Charge Nurses (CNs) are overburdened with workloads, spending more time in managing the inventories of stock registers, such as general over, linen over, medicine over, etc. besides providing nursing care to patients nurses are occupied with multiple non-nursing tasks, where they have to manage and account for item ranges from needle to oxygen cylinder; from bed sheet to the bed fixing; from receiving the medicines to the distribution and maintaining all kind of stock registers with the constant updating records. Chauhan (2014), stated that medical sector in Pakistan has historically been more preoccupied with cure rather than care, the existing nurse- patient ratio in Pakistan is approximately 1:50 whereas the ratio prescribed by the Pakistan Nursing Council (PNC) is 1:10 in general areas and 2:1 in specialized areas.

Hamid, Malik and Ramzan, (2013) reported that most dissatisfying factors at work and within the work setting are high workload.

There is paucity of literature in Pakistan on workload performance & job satisfaction, this study is important as it was the first attempt to study the measurement of nursing workload performance for nursing and non-nursing care activities.

This relationship is reciprocal, meaning people who are satisfied with life tends to be satisfied with their job and people who are satisfied with their job tends to be satisfied with life. Therefor it's important to further study the overload work performance in the context of nursing and non- nursing care activities of nurses and its relation with their job satisfaction. As a result, there would a drive in the authorities' to bring some change in policy in order to divide the task by various personals. This will be helpful to raise the quality of health care delivery system

Method

A descriptive cross sectional study with method of primary data collection was adopted to extract information from all charge nurses working at Nishtar Medical College & hospital Multan, Pakistan. Sample size collection prevalence (p) was assumed 50% with confident interval of 95 % (z=1.96) and Q was 1-p, margin of error is assumed to be 10% on the basis of this my sample size is 96 additional 10% is added for refusals the total sample size is 105 recruited by convenience sampling. The questionnaire validity was checked on same group of charge nurses by the consultations of professionals in the field. Reliability study was conducted using Cronbach's alpha. Nurses' Workload performances were collected by using self-developed instrument, and Job Satisfaction were collected by using modified Spector 1985. The collected data were analyze

descriptively (mean, SD, frequencies, percentage) and inferentially (Pearson's correlation).

Results

Table 1 Characteristics of The Respondents (n=105)

Characteristics	Frequencies	Percentage
Marital status		
Married	53	50.5
Unmarried	49	46.7
Divorce	3	2.9
Professional qualification		
Charge Nurses (CNs)	62	59
CNs with (DWA)	4	3.8
CNs (DTA)	2	1.9
CNs with BSc Nursing	31	29.5
CNs with other then nursing qualification	6	5.7
Job experience		
< 1–5 years	55	52.4
6–10 years	34	32.4
11–15 years	11	10.5
16>20 years	5	4.8
Present placement		
Medical unit	11	10.5
Surgical unit	22	21
Pediatric unit	15	14.3
Obstetrics	11	10.5
Emergency unit	7	6.7
Cardiac unit	10	9.5
Other	29	27.6
Present shift		
Morning	49	46.7
Evening	29	27.6
Night	27	25.7
Age (Years)		
Mean	(29.47) SD (5.50)	
Minimum – Maximum	25–45	

Table 2 Total average time of WLP /per unit (Nursing and Non-nursing care activities)

Shifts	Average Total amount of time	Percentage	Total actual time* persons on duty in a unit	Total Nursing care activities average minutes and percentage	Total Non-nursing care activities average minutes and percentage
Morning (n=49)	309,22	93.83	360*3=1080	205.57 (57.10%)	132.24 (36.73%)

Evening (n=29)	344.29	95.63	360*3=1080	187.51 (52.1%)	156.78 (43.56%)
Night (n=27)	508.98	70.69	720*2=1440	305.46 (42.43%)	203.51 (55. 66%)

Table 3 Frequency and Percentage of WLP

Shifts	Low than average Frequency (percentage)	Average Percentage	Higher than average Frequency (percentage)
Morning (n = 49)	23 (46.9)	93.83	26 (53.1)
Evening (n=29)	14 (48.2)	95.6	15 (51.7)
Night (n=27)	16 (59.2)	70.6	11 (40.7)

Table 4 Level of Job Satisfaction

Shifts	Lower than average Frequency (percentage)	Average	Higher than average Frequency (percentage)
Morning (n = 49)	24 (48.9)	38.32	25 (51.0)
Evening (n=29)	12 (41.3)	38.14	17 (58.6)
Night (n=27)	14 (51.1)	39.89	13 (48.I)

Table 5 Correlation Between The WLP and JS as per shift

Shifts	WLP Total average minutes	JS Total average score	r	p value
Morning	309.22	38.32	-.058	0.69
Evening	344.29	38.13	0.21	0.26
Night	508.98	39.88	0.086	0.67

Table 6 Correlation Between The WLP and JS (n=105)

WLP Total averages minutes	JS Total average score	r	P value
383.64	38.68	0.146	0.137

Characteristics of Respondents

The study also considered some other vital information in the demography which includes designation, job experience, professional qualifications, present placement and present shift.

Table 1 shows that half of the respondents were married (50.5), more than half were charge nurses (59%) with nonspecific qualification, while half of the respondent's Job experience (50.4%) were <1-5 years, where (27.6%) respondents were placed in other departments of the hospital, almost half (46.7%) were on morning shift duty, and minimum age respondents recorded 25, maximum age were 45 with the 29.45 mean and 5.50 SD.

Nursing Workload Performance

Table 2 describes that the average time and percentage, charge nurses spend to achieve their workload performance in their three shifts and average time is divided with the no of persons who were present on shift in per unit because the nursing and non-nursing tasks(workload) were assigned to all nurses

who were deployed in unit, further to get actual workload the work also distributed on persons who were present on shift in a unit, so the actual minutes 360 minutes of morning, evening and 720-night shift multiplied with the no of charge nurses present in one unit in each shift to achieve the real minutes of WLP.

Table 2 represented that the respondents in morning shift (93.83 %) and evening shift (95.63 %) consumed almost full of time to accomplish their workload performance, as compare to night shifts where workload is low (70.69 %). To perform nursing care activities respondents reported more the half of time consumed (57.10 %) in morning shift, (52.1 %) in evening shift while less than half time consumed (42.43 %) in night shift, to perform non-nursing care activities the scenario is opposite, respondents consumed less time in morning and night shift and more in night shift.

Table 3 indicates that respondents from morning (53.1 %) and evening (51.7 %) shifts reported that consumed more than half of, above then average time consumed in WLP, where respondents from night shift resulted more than half of time lower than average (59.2 %) consumed to accomplish WLP.

Job Satisfaction

Table 4 indicates that the average moderate level of job satisfaction of respondents in all three shifts from the total score of 75.

Table 6 shows that correlation between morning shift WLP and JS (r =-.058), while their correlation between evening shift WLP and JS (r =.21).

Table 6 indicates that, there is no statistically significant correlation between WLP & JS with the .137 p value.

Discussion

The purpose of this study was to examine the relationship between job satisfaction and workload performance (nursing care activities and non-nursing care activities) of charge nurses of Nishtar Medical College & Hospital Multan. This chapter discusses the findings of the research questions surrounding characteristics of the respondents, workload performance for nursing care activities and non-nursing care activities, and job satisfaction, in addition, relationships between these variables are compared and contrasted with other research findings on the same topics.

The study aimed to figure out the workload performance which resulted that charge nurses consumed full of their time more than 90 % to accomplish their tasks in morning and evening shift as contrast with night shift average time consumed (70.69 %) which means workload is high in morning and evening this results contrasted with Debergh et al. (2012) study of measurement of workload per shift in the ICU where researcher measured nursing care activities per shift was (85.5 %). In general nursing workload recorded high in ICU as compare to other departments, whereas this study recorded higher workload then ICU from all department of the hospital.

The study findings observed the proportion of time consumed on nursing and non-nursing patient care activities, charge nurses consumed more than half of their time (Morning =57.10%, Evening =52.1%) to perform nursing care patient activities whereas less than half time (Morning = 36.73%, Evening =43.56%) to perform non-nursing care activities, actually nurses in Nishtar Medical college and hospital have higher non-nursing activities workload but sometimes they took medicine expense register to their home to complete their tasks and most of the time they keep forward to night shift as evident in table 4.2 non-nursing activities recorded (55.66%) average time in night shift.

In addition, findings of the study recorded that charge nurses spend lowest minimum average time on 7.429 minutes for making nursing care plan and highest maximum average time 82.86 minutes for medicating the patients for nursing care activities, which means charge nurses don't have enough time to make appropriate nursing care plans, conceptually & factually it's not possible to make nursing care plans of one unit patients which are 40 to 80 in number within 7.429 minutes.

For non-nursing care activities this study recorded charge nurses spend minimum average time in writing of demands of supplies and maximum average time (102.33

minutes) on managing medicine expense, similarly Jackson Healthcare (2012) reported that about 78% of nurses testified spending at least two hours (120 minutes) per shift on non-nursing care activities (Documenting information in multiple locations, Completing logs, checklists, and collecting data, Traveling to equipment, supply, and utility rooms, and Entering and reviewing orders). Whereas this study recorded charge nurse's maximum average time (203.51 minutes) which means three and half hours (Reference table is available in appendix).This study intended to weigh the level of job satisfaction of charge nurses of Nishtar Medical College and Hospital Multan which concluded total job satisfaction mean 38 .86 in all three shifts, which indicates nurses on a moderate level of job satisfaction despite of any shift, findings of this study are contradicted to Jaiswal et al. (2015) which reported job satisfaction rate highest (68%) among nurses.

Job satisfaction seems like a complex phenomenon as this study evident that the 15 item of job satisfaction (scored 1 low to 5 high) the 4 items of JS, equitable benefits, rewards, job is enjoyable & adequate opportunity to utilize and update skills and talent, was scored between >3 & >4 which suggest the high level of satisfaction with these items, while 8 items of JS, salary ,communication within the organization, organizational supervision system, appreciation of work, co-workers, sense of pride, and bickering/ fighting at work were scored >2 & <3 which suggested the moderate level of job satisfaction of these items, and 3 items of JS heavy paperwork, high workload, and chance of promotion were scored very low>1 & <2 which suggested charge nurse are not happy at all with high workload, high paperwork and chances of promotion therefor these items scored very low. Perhaps one of the interesting results of this study shows that the age, marital status, job experience, and present placement of the respondents were not influence the workload performance and job satisfaction of charge nurses. Hence the present shift of the respondents recorded the different level of workload of nursing and non-nursing care activities.

The exciting finding on professional qualification have the effect on job satisfaction as this study evident that the charge nurses with higher nursing education also such as BSc Nursing table 4.1 (29.5%) were also deputed as charge nurses which supposed to be on higher rank according to their qualification, therefore the job satisfaction (item no 2: there is really little chance of promotion on my job) scored very low 1.2 out of 5 which indicates charge nurses are not satisfied with their chance of promotion.

In general this study aimed to figure out the relationship between workload performance and job satisfaction which statistically proved that there is no significance correlation between workload performance and job satisfaction despite of all three shifts with the p value (.137) among the charge nurses, the study didn't proved the significant correlation as researcher did not control the other factors that also contribute job satisfaction as literature proved that there are several factors control job.

Strength and Limitation of The Study

The strength of the study was the questionnaire that used in this study was validated by three experts, and statistically had acceptable reliability score.

Satisfaction of nurses working in tertiary level Health care settings in Pakistan Bahalkani, Kumar, Lakho, Mahar, Mazhar, and Majeed (2011) found 86% respondents were dissatisfied their job due to the poor work environments, poor fringe benefits, dignity, responsibility given at workplace and time pressure, and Poor lack of training opportunities, proper supervision and Sultana, Riaz, Mahmood, and Khursih, (2011) also observed 37.14% nurses least satisfied with their job in the context of working environment, dealing of health care professionals with nurses, and attitude of the patients and their attendants towards nurses. Further, the set of data were used in this study were homogeneous in nature therefore it was difficult to find the strong significant correlation.

The financial resources were limited due to that the generalization of the findings remain limited and different findings possibly were found in other settings, particularly the setting with varies health care delivery model.

Conclusion

Firstly, this study assess the proportion of time consumed on nursing and non-nursing patient care activities the findings concluded that charge nurses in morning and evening shift consumed more than half of their time to perform nursing care activities and less than half time to perform non-nursing care activities, which is opposite to night shifts where nurses consumed more than half of their time in non- nursing care activities.

Secondly this study intends to weigh the level of job satisfaction of charge nurse and findings concluded that charge nurses are on moderate level of job satisfaction.

Thirdly the study results observed that there is no significance correlation between workload performance and job satisfaction among charge nurses of Nishtar Medical College and Hospital.

It is clearly evident from this study that charge nurses consumed their full time on workload performance and > 40% average time on conducting non-nursing care activities, which are related to record keeping of expenses of various supplies manually, therefor its strongly recommended the adaptation of Electronic Health records & Management information system it could be brought to further minimize the level of workload and nurses could be able to provide quality nursing care with the higher level of job satisfaction. Further it's suggested to hospital management to adopt some better strategies to overcome nurse's workload and improve nurse's job satisfaction level moderate to highest.

The study provided a research base evidence for nurses and other professional healthcare provider, university member, and researcher for further research and knowledge development.

In Future empirical work needs to test and examine how addressing with different contributing factors might foster nurses' job satisfaction with their workload performance within the hospital and also researcher recommends that this study should be replicated in vary/multi setting with the bigger number of sample measurements in Pakistan in order to further clarify and strengthen the evidences to maximize the benefits for nursing care services in order to provision of quality care.

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An Exploration the Risk of Cardiovascular Disease in HIV-Positive Persons in Indonesia using Heart Rate Variability

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Abstract

Cardiovascular disease is the highest cause of death in HIV patients compared to the general population. The number of HIV patients suffering from cardiovascular disease is almost twice as high as patients who are not HIV-positive. The purpose of this study was to identify the risk of cardivascular disease in patients with HIV using ECG short term. This study was used a descriptive comparative to patients with HIV and healthy people as controls in West Java. The inclusion criteria are patients with HIV over the age of 30 years. The exclusion criteria were people with HIV diagnosed with heart disease or being treated for the heart disease. While the inclusion criteria for healthy people as controls are over 30 years of age, do not suffer from cardivascular disease or under treatment of cardiovascular disease. The measurement of heart rate variability is carried out in a supine position in a quiet temperature-controlled room (25-270 C), a 5-minute electrocardiograph (ECG) is recorded using lead II. Differences of heart rate variability indicator were measure using man-whitney test. A total of 20 patients with HIV and 20 healthy people recruited using convinience sampling. The majority of people with HIV were male and aged range between 27 to 51 years old. The results of heart rate variability based on time domain analysis showed that the means normal to normal (NN) was significantly lower in HIV patients compared to controls (978 vs ?? vs 902 ms; $p<0.05$). No differences were found between groups regarding Standard deviation of NN (SDNN), Square root of the mean squared difference of successive NN-intervals (RMSSD) and Percent of differences between adjacent NN intervals greater than 50 ms (pNN50). This study presence of autonomic dysfunction as showed in heart rate variability indicator in a group of HIV compared to the healthy group. Eearly identification of the risk of CVD is important and may inform the implementation of preventive measure by identification of high-risk people who may be candidate for intervention.

Keywords: Cardivascular disease, HIV, heart rate variability, HRV, risk estimation.

Introduction

Cardiovascular disease is the leading cause of death not only in general population but also in patients with HIV (Human Immunodeficiency virus). Because of its high mortality rate, cardiovascular disease receives a major concern in the care and management of patients with HIV, especially those under antiretroviral therapy (ART). Previous research reported that there was a shift on the trend of caused of the death of patients with HIV. In the era before ART (pre-ART) was found only 5% of deaths caused by heart disease, but now, in the era posts-ART, 32-42% of HIV patients die due to heart disease (Krentz, Kliewer, & Gill, 2015; Palella et al., 2016). Patients with HIV have 1.5 to 2 times the cardiovascular risk compared to people who are not infected with HIV and that increases with age (Chow et al., 2015; Triant, Lee, Hadigan, & Grinspoon, 2007). Another study reported that about 58.3% of patients with HIV had at least one cardiovascular risk factor and 18.9% had two and more cardiovascular risk factors (Soliman et al., 2015). The risk of cardiovascular disease continues to increase in patients with HIV on ARTcabout 74.4% and 25.6% of naïve ART (Nsagha et al., 2015). In addition, the increased risk of heart disease in HIV patients is related to lifestyle and risk behavioral factors such as high rates of smoking, alcoholism, and drug use, and obesity (Grundy, 2016).

Heart rate variability (HRV) is a very sensitive tool for measuring the autonomic tone of the heart. It reflects beat-to-beat changes in RR intervals, which are related to ongoing interactions between two autonomic nervous system arms (Mittal, 2004). Heart rate changes can occur in response to mental or physical stress, heart or non-cardiovascular disease, or pharmacological or invasive treatment. Imbalance of the autonomic nervous system with a shift toward increased sympathetic and decreased vagal tone has been shown to be associated with a higher risk of cardiac death. Therefore HRV becomes an important and well-known tool in identifying patients who are at cardiovascular risk (Sakhuja, 2007). By recording heart activity through an electrocardiogram (EKG) for 5 minutes can detect a person's risk of heart disease. HRV is easy to do, convenient, non-invasive to patients, and also inexpensive (Mittal, 2004). It is able to detect the effects of external interference. Previous studies conducted in Denmark reported that there was a moderate autonomy disorder in HIV patients as measured by HRV (Askgaard, 2011; Wongcharoen, 2013). Several studies have shown that the statistical, geometrical, spectral and nonlinear analysis of HRV is a powerful tool for cardiovascular evaluation (Correia, 2006; Melillo, 2015).

In Indonesia there are still few studies that focus on early detection of cardiovascular disease in the general public (who are not infected with HIV) or HIV patients, whereas heart disease (a type of cardiovascular disease) is the first killer of Indonesian society. Thus, early detection and early prevention interventions for people at high risk in routine practice to reduce the incidence of cardiovascular disease are very necessary. So the purpose of this study was to identify the risk of cardivascular disease in patients with HIV using ECG short term.

Method

Study design

This study was used a descriptive comparative aims to identify CVD risk using ECG short term, namely HRV indicators in patients with HIV compared with healthy people

Population and Samples

The population in this study were patients with HIV and healthy people as controls in West Java. The inclusion criteria are diagnosed with HIV confirmed by medical record, age over 30 years, not diagnosed from heart disease or being treated for the heart disease. The inclusion criteria for healthy people were age over 30 years, not dignosed with cardivascular disease or receiving treatment of cardiovascular disease. Exclusion criteria are pregnant women, people with diabetes mellitus, and menopause. The sample technique that will be used is convinience sampling due to resource constraint. A total of 40 participant that consist of 20 patients with HIV and 20 healthy people were recruited

in this study. Approval of ethical permission was obtained from the afiliated univeristy.

Measurement

Demographic data and medical history were collected using standard forms. Demographic data collected includes age and gender. Medical history including self-reported of years living with HIV and Under ART, and current CD4 counts.

Physical examination includes systolic and diastolic blood pressure, height, and weight. Blood pressure was measured by nurses through the brachial artery using a digital sphygmomanometer with an adult cuff on the day of data collection. The patient sits in an upright position in a quiet room; two consecutive blood pressure measurements were taken, and the average was recorded as the final result. Blood pressure is defined as high if systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg (Pickering, 2005). Subjects were defined as thin if the BMI (body mass index) ≤18.5 kg / m2, normal (BMI ranging from 18.5 to 24.9), being overweight (BMI starting from 25.0-29.9), and obesity (BMI ≥ 30).

The measurement of heart rate variability is carried out in a supine position in a quiet temperature-controlled room (25-270 C), a 5-minute electrocardiograph (ECG) is recorded using lead II. The following five tests were carried out to assess autonomic function (Miller, 1987): 1) Stand active: Blood pressure is measured in the supine position and immediately after active standing. Blood pressure and heart rate response and the ratio of 30:15 (the ratio of the longest R-R interval of about 30 beats and the shortest interval of R-R is calculated to be about 15 beats); 2). Deep breathing: expiration: inspiration ratio (E: I) and changes in heart rate measured during deep breathing; 3). Static grip test: Blood pressure response during isometric exercise is measured; 4). Cold pressor test: Blood pressure response to soak hands in ice cold water is assessed; 5). Cold face test: The response of blood pressure during the application of cold packs to the face is measured.

Data analysis

The Kolmogorov-Smirnov test of all variables was performed to test the normal distribution assumption. As the results of normality test found not normally distribute, therefore all the test was conducted using non parametric test. Comparisons between groups were performed using the Fisher exact test for binomial data (2x2 contingency tables) and the Mann-Whitney test for continuous data. Correlations were analyzed using non-parametric (Spearman) correlation and expressed by Spearman's rho. P <0.05 was considered significant. P values between 0.05 and 0.1 are considered to be significant limits.

Table 1 Comparation of Demographic and Clinical Characteristics of Study Groups

	HIV group (n=20)	Control group (n=20)	Significance
Gender (%)			
Male	11 (55)	12 (60)	0.12
Female	9 (45)	8 (40)	
Age (years)	43 (27–51)	42 (29–56)	0.43
Body Mass Index (kg/m2)	25 (23–27)	25 (24–28)	0.32
Diastolic blood pressure (mmHg)	76 (69–81)	74 (67–89)	0.54
Systolic blood pressure (mmHg)	123 (116–134)	125 (115–139)	0.67
Duration of HIV (years)	9.1 (5.8–14.3)	-	-
Duration of ART (years)	7.3 (3.6–8.1)	-	-
CD4 cell cound (cell/mm3)	432 (342–676)	-	-

Note: ns: non significance.

Table 2 Heart Rate Variability Based On Time Domain Analysis

	HIV group (n=20)	Control group (n=20)	Significance
Mean NN (ms)	902 (845–987)	978 (891–1,113)	P<0.05
SDNN (ms)	45 (37–67)	51 (43–76)	0.13
RMSSD (ms)	29 (20-48)	26 (22–40)	0.47
pNN50 (%)	5(1–20)	4 (1–8)	0.32

Note: Values are median (25 percentile–75 percentile).

Results

A total of 20 patients with HIV and 20 healthy people. The majority of people with HIV were male and aged range between 27 to 51 years old. While, in control group, majority were male and aged ranged 29 to 56 years old. The mean duration of living with HIV was 9 years (range 5.8–14.3). There were no significant different between HIV group and control group (healthy people) in tearm of age, gender, body mass index, systolic and diastolic blood pressure (Table 1).

The results of heart rate variability based on time domain analysis is described in Table 2. The means mean normal-to-normal (NN) was significantly lower in HIV patients compared to controls (978 vs vs 902 ms; $p<0.05$). No differences were found between groups regarding Standard deviation of NN (SDNN), Square root of the mean squared difference of successive NN-intervals (RMSSD) and Percent of differences between adjacent NN intervals greater than 50 ms (pNN50).

Mean NN: mean normal-to-normal, SDNN: Standard deviation of NN; RMSSD:

Square root of the mean squared difference of successive NN-intervals; pNN50:

Percent of differences between adjacent NN intervals greater than 50 ms.

Discussion

Our study presence of autonomic dysfunction in a group of HIV compared to the healthy group. Decrease in mean NN indicating a decrease mainly in parasympathetic tone (Askgaard, 2011). Some evidence has reported that there is an increased risk of cardiovascular disease in HIV patients (Freiberg et al., 2013). A recent analysis of HIV patients aged 30-50 years using bilateral intima-media (cIMT) found that 19.2% of HIV-infected patients had an increased risk of cardiovascular disease (Mosepele et al., 2017). A study from the Netherlands reported that around 33% of HIV patients measured by FRS had a high risk of cardiovascular disease (Krikke et al., 2016). This was supported by a cross-sectional study conducted in Croatia (n = 254) reporting that people with HIV had a high risk of CVD, ranging from 27.2% measured by FRS to 51.6% for DAD scores (Begovac et al., 2015). A study from Zimbabwe in HIV-positive people (n = 215, mean age = 39.8-42.0, under ART 3.9 (SD = 3.4)) also reported 1.4% prevalence of high risk cardivascular disease in the next ten years (Zhou et al., 2015).

The underlying mechanism by which HIV driving excess CVD risk is not clear but likely involves a combination of factors including the virus itself, side effects of cART and the burden of traditional risk factors. HIV infection is associated with an increased risk of CVD surrogate marker, such as carotid intima-media thickness, arterial stiffness, endothelial dysfunction (Obel et al., 2007; Oliviero et al., 2009; van Vonderen et al., 2009). In addition, cART increased risk of CVD by elevating LDL, total cholesterol, triglyceride, and HDL (Kiage et al., 2013; Nsagha et al., 2015). Moreover, the increasing vulnerability of CVD depending on lifestyle and risk behaviors factors such as smoking, alcoholism, and illicit drug use, as well obesity (Grundy, 2016).

Heart rate variability (HRV) is a very sensitive tool for measuring the heart's autonomic tone. Previous studies conducted in Denmark reported that there was moderate autonomic disorder in HIV patients measured using HRV (Askgaard, 2011 & Wongcharoen, 2013). Previous study shown that statistical, geometric, spectral and nonlinear analyzes of

HRV are powerful tools for cardiovascular evaluation (Binici, 2011). Heart rate variability (HRV) reflects beat-to-beat changes in RR intervals, which are related to ongoing interactions between two autonomic nervous system arms (Mittal, 2004). The sinus node, the main pacemaker, presents its own intrinsic activity; however, various internal and external stimuli that change the balance between sympathetic and vagal tone affect the final base heart rate. Heart rate changes can occur in response to mental or physical stress, heart or non-cardiovascular disease, or pharmacological or invasive treatment. Imbalance of the autonomic nervous system with a shift toward increased sympathetic and decreased vagal tone has been shown to be associated with a higher risk of cardiac death. Therefore HRV becomes an important and well-known tool in identifying patients who are at cardiovascular risk (Sakhuja, 2007). HRV measurement becomes an important tool in detecting damage and predicting autonomic prognosis in several neurological disorders as well. Heart rate (HR) has been extensively studied in cardiac patients, especially in patients with acute myocardial infarction (AMI) and also in patients with congestive heart failure (CHF) or left ventricular dysfunction (LV). The majority of studies have shown that patients with reduced or abnormal HRV have an increased risk of death within a few years after AMI or after the diagnosis of CHF / LV dysfunction. Various methods used for HRV measurement such as time domain, spectral, and non-linear have been used in risk stratification.

Conclusion

Our study found a presence of autonomic dysfunction as presented in heart rate variability analysis in patients with HIV indicating decreased in the parasympatic tone of the heart. Althought others parameter in heart rate variability were not significantly different between HIV group and healthy group. Eearly identification of the risk of CVD is important and may inform the implementation of preventive measure by identification of high-risk people who may be candidate for intervention.

The authors declare that they have no competing interests.

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Knowledge, Attitude and Practice of Evidence-Based Nursing Practice and Barriers

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Abstract

Professional nurses, one of the human resources in the health sector, are obliged to carry out the nursing process, especially nursing, based on scientific evidence. This study aimed to describe the knowledge, attitudes, and practice of evidence-based practice and its barriers to the hospital. Quantitative research with a descriptive approach was conducted at Dr. M. Djamil Hospital, Padang. A consecutive sampling technique was utilized, with 139 selected nurse practitioners, and only 90 nurses filled in the questionnaires. The instruments used were Evidence-Based Practice Profiles (EBP2) and the BARRIERS Scale. Characteristics of respondents were 70.0% diploma education; mean age was 36.7 (SD=7.95) years and 13.35 (SD=8.37) years of working time. The mean attitude towards EBP was higher than the mean of EBP knowledge/understanding, confidence, understanding of research terms, and practice towards EBP (3.32; 2.93; 2.72; 2.53; 1.95). Therefore, there is a definite need for improving knowledge, comprehending EBP, and research terminology to overcome the obstacles of EBP implementation in the nursing service practice.

Keywords: Attitudes, barriers, evidence-based practice, knowledge, implementation.

Introduction

Human resources are one of the input subsystems to achieve the goals of the health system. An important focus in human resources is the development and enabling of human resources as well as improving the quality of human resources in the health sector. Human resources in the health sector have the right to fulfill their basic needs (human rights) as social beings, competence, and the authority to dedicate themselves in the fields of health, ethics, moral noble, and specialized in duty.

Professional nurses are one of the human resources in the health sector. Nurses must carry out the nursing process, especially nursing interventions based on scientific evidence. It is line with the opinion of Mahanes, Quatrara, and Dale (2013) that nurses are expected to stay up to date on a large number of institutional initiatives, best practice guidelines, and policies and procedures.

In nursing, evidence-based practice is essential to provide high-quality care. The Institute of Medicine (IoM) claims that Evidence-Based Practice (EBP) is very important in improving and ensuring the quality of health services (Rn, Knops, Ubbink, & Rn, 2013). The IOM study in 2001 reported that patients received recommended evidence-based treatment measures only as much as 55% (Anne & Woods, 2013). In contrast, according to Bach (2005), evidence-based practice in the care of the general population is provided for only 50% (Wood & Payne, 2012). In the nursing profession, research findings as new information will be incorporated continuously in nursing practice (Pipe, Wellick, Buchda, Hansen, & Martyn, 2005). Unfortunately, nurses faced real challenges when translating the best evidence in clinical practice (Pipe et al., 2005; Boström, Rudman, Ehrenberg, Gustavsson, & Wallin, 2013). Several studies have been conducted to find out about knowledge, attitudes, and awareness about EBP in various countries (Rn et al., 2013; White-Williams et al., 2013; McKenna, Ashton, & Keeney, 2004). Furthermore, a literature review of 37 articles found five obstacles, namely clinical characteristics, nursing education, research habits and reading literature, facilitation of research use, and its relevance to nursing staff and clinical practice (Athanasakis, 2013). A study showed that among surgeons, 90% was familiar with the term EBS, whereas nurses were only 40%. Common barriers for surgeons were contradictory results (79%) and inadequate reporting methodology (73%), and for nurses was EBS unconsciousness (67%) and unclear research reports (59%) (Legemate & Ubbink, 2009).

Since the establishment of the Nursing Science Program, Universitas Andalas has introduced research on nursing students. Students have been instructed to disseminate the results of their study in the field of nursing. It was based on the Nursing Academic Curriculum 2009, 2012, and has been supported by qualified nursing tutors who are at the master and doctoral level. Based on the 2009-2013 Nurse Curriculum, there are literature review lecture sessions, which expose nurses to research articles and the importance of practice based on scientific evidence. However, there is no accurate data on the extent to which nurses' knowledge and attitudes are related to evidence-based practice and how evidence-based nursing practice is applied.

Little information is known about the use, knowledge, and attitudes towards EBP, including its barriers among nurses in hospitals in Padang. Therefore, it is necessary to study the knowledge, attitudes, and factors affecting evidence-based nursing practice (EBNP) among nurses in hospitals.

Further, based on observations, it found that the majority of hospital-nurses rarely used evidence-based practice (EBP). When asked by the researcher, some of them did not comprehend the importance of EBP. Thus, research is needed so that relevant policies and strategies can be recommended based on research findings. This study aimed to determine the knowledge, attitudes, implementation, and constraints towards evidence-based practice in nurse practitioners.

Method

The research design was quantitative with a

descriptive approach. Consecutive sampling of nurse practitioners at Dr. M. Djamil Hospital, Padang, was conducted from August 1 to August 30, 2017. Eligibility criteria required individuals to have work experience equal to or more than one year in the hospital. The number of questionnaires distributed was 139 and returned as many as 119.

Moreover, the research response rate was high at around 85.61%. Furthermore, of the 119 questionnaires returned, some personal data were found to be incomplete, and only 90 questionnaires were completed in full on evidence-based practice and barrier scale. Thus, the data analyzed were only 90.

The instrument used the Evidence-Based Practice Profile (EBP2) questionnaire (McEvoy, Williams, & Olds, 2010) and BARRIERS Scale (Wang, Jiang, Wang, Wang, & Bai, 2013). EBP2 has 58 items arranged in five domains, namely understanding EBP (4 items), attitudes towards EBP (17 items), comprehending research terminology (17 items), practice (9 items), and self-confidence (11 items). The BARRIERS scale, which includes 29 questions about obstacles of applying research to practice in a healthcare setting, uses five scales (Legemate & Ubbink, 2009). The questionnaire is in English, translated into the Indonesian language by the process of forward-backward translation. The validity and reliability of the instrument were not undertaken since previous studies revealed that both instruments were useful, valid, and reliable to use (McEvoy et al., 2010; Wang et al., 2013).

All data management and analysis were managed using SPPS Statistics 23.0. Data were imported into SPSS and checked for missing values. Numerical variables (EBP understanding/knowledge, attitude, practice, and barriers) were displayed in mean, standard deviation, median, minimum, and maximum, while the respondents' characteristics were summarized by number and percentage.

Results

Table 1 Description of Respondents Seen From Age, Gender, Recent Education, Work Experience, and Inpatient Room (n = 90)

Characteristics	f	Mean	SD	Min	Max
Age (years)	84	36.75	7.95	26	58
Missing data	6				
Work experience (years)	78	13.35	8.37	1	37
Missing data	12				
Gender	**f**	**%**			
Male	14	15.6			
Female	65	72.2			
Missing data	11	12.2			
Education					
Senior High School in Nursing	3	3.3			
Diploma	63	70.0			
Bachelor of Nursing & Registered Nurse	13	14.4			
Missing data	11	12.2			
Room					
Pediatric-Maternity	13	14.4			
Surgery	38	42.2			
Non-surgery	15	16.7			

Operation Room	17	18.9
Cardiovascular Care Unit	7	7.8

Table 2 EBP Understanding/Knowledge Responses, Attitude Towards EBP, Understanding of Research Terms, Practice towards EBP and Confidence to EBP

Aspects	Mean (SD)	Minimum	Maximum
EBP understanding	2.93 (0.96)	1.00	5.00
Attitude towards EBP	3.32 (0.51)	1.18	4.35
Understanding of research terms	2.53 (0.79)	1.00	4.00
Practice towards EBP	1.95 (0.91)	1.00	5.00
Confidence to EBP	2.72 (0.44)	1.00	4.18

Table 3 Frequency distribution and percentage of the Barrier scale

No	Subscale and item	Very disagree	Disagree	Neutral	Agree	Very Agree
Nurse subscale: The nurse's research values, skills, and awareness (Adopter)						
	Item	**f (%)**	**f (%)**	**f (%)**	**f (%)**	**f (%)**
1.	The nurse is unaware of the research	10 (11.1)	55 (61.1)	22 (24.4)	3 (3.3)	0
2.	The nurse does not feel capable of evaluating the quality of the research	7 (7.8)	43 (47.8)	36 (40.0)	4 (4.4)	0
3.	The nurse is isolated from knowledgeable colleagues with whom to discuss the research	11 (12.2)	45 (50.0)	31 (34.4)	3 (3.3)	0
4.	The nurse is unwilling to change/ try new ideas	15 (16.7)	32 (35.6)	41 (45.6)	2 (2.2)	0
5.	The nurse sees little benefit for self	12 (13.3)	37 (41.1)	29 (32.2)	12 (13.3)	0
6.	There is not a documented need to change practice	11 (12.2)	39 (43.3)	30 (33.3)	4 (4.4)	6 (6.7)
7.	The nurse feels the benefits of changing practice will be minimal	10 (38)	38 (42.2)	37 (41.1)	5 (5.6)	0
8.	The nurse does not see the value of research for practice	16 (17.8)	34 (37.8)	34 (37.8)	6 (6.7)	0
Setting subscale: Setting barriers and limitations (Organization)						
9.	There is insufficient time on the job to implement new ideas	5 (5.6)	18 (20.0)	57 (63.3)	10 (11.1)	0
10.	The nurse does not have time to read the research	4 (4.4)	21 (23.3)	43 (47.8)	22 (24.4)	0
11.	The nurse does not feel she/he has enough authority to change patient care procedures	6 (6.7)	23 (25.6)	41 (45.6)	20 (22.2)	0
12.	The facilities are inadequate for implementation	6 (6.7)	13 (14.4)	46 (51.1)	23 (25.6)	2 (2.2)

13.	Other staff are not supportive of implementation	3 (3.3)	20 (22.2)	54 (60.0)	13 (14.4)	0
14.	Physicians will not cooperate with implementation	3 (3.3)	35 (38.9)	44 (48.9)	7 (7.8)	1 (1.1)
15.	The nurse feels results are not generalizable to own setting	2 (2.2)	31 (34.4)	50 (55.6)	7 (7.8)	0
16.	Administration will not allow implementation	4 (4.4)	27 (30.0)	52 (57.8)	7 (7.8)	0
Research subscale: Qualities of the research (Innovation)						
17.	The research has not been replicated	0	18 (20.0)	52 (57.8)	20 (22.2)	0
18.	The literature reports conflicting results	0	19 (21.1)	64 (71.1)	7 (7.8)	0
19.	The research has methodological inadequacies	1 (1.1)	31 (34.4)	49 (54.4)	9 (10.0)	0
20.	Research reports/articles are not published fast enough	0	18 (20.0)	52 (57.8)	20 (22.2)	0
21.	The nurse is uncertain whether to believe the results of the research	1 (1.1)	31 (34.4)	52 (57.8)	6 (6.7)	0
22.	The conclusions drawn from the research are not justified	2 (2.2)	21 (23.3)	62 (68.9)	5 (5.6)	0
Presentation subscale: Presentation and accessibility of the research (Communication)						
23.	The statistical analyses are not understandable	1 (1.1)	21 (23.3)	51 (56.7)	17 (18.9)	0
24.	The relevant literature is not compiled in one place	1 (1.1)	18 (20.0)	42 (46.7)	28 (31.1)	1 (1.1)
25.	Research reports/articles are not readily available	1 (1.1)	17 (18.9)	47 (52.2)	25 (27.8)	0
26.	Implications for practice are not made clear	1 (1.1)	19 (21.1)	53 (58.9)	17 (18.9)	0
27.	The research is not reported clearly and readably	1 (1.1)	25 (27.8)	52 (57.8)	12 (13.3)	0
28.	The research is not relevant to nurse's practice	1 (1.1)	26 (28.9)	47 (52.2)	16 (17.8)	0
Items not included in any of the subscales (Others)						
29.	The amount of research information is overwhelming	1 (1.1)	21 (23.3)	44 (48.9)	22 (24.4)	2 (2.2)
30.	Research reports/articles are written in English	6 (6.7)	25 (27.8)	49 (54.4)	9 (10.0)	1 (1.1)

Table 4 Barrier Scale Score

Subscale	Mean (SD)	Minimum	Maximum
Adopter	2.37 (0.60)	1.00	3.75
Organization	2.80 (0.54)	1.25	4.13
Innovation	2.85 (0.47)	2.00	4.00
Communication	2.96 (0.63)	1.00	4.00
Others	2.87 (0.64)	1.00	4.50
Total	2.73 (0.44)	1.70	3.83

Table 1 shows that the average age was 36.75 years. The average nurse has been working in this hospital for 13.35 years, with the lowest and highest working period were one year and 37 years. Almost ¾ respondents were female. More than half of the 70% of respondents' final education was vocational, followed by nursing graduates and registered nurses amounted to 14.4%, and the remaining around 3.3% were senior high school level in the nursing field. Nearly half of the respondents as many as 42% worked in the Operation Room (OR).

Table 2 illustrates the mean, minimum, and maximum of EBP understanding/ knowledge responses, EBP attitude responses, understanding of research terms, actions against scientific evidence-based practices, and confidence in EBP on nurses at Dr. M. Djamil Hospital 2017. The average attitude score on evidence-based practice (EBP) was the highest among the other scores on average. Meanwhile, action against EBP has the lowest average score.

Table 3 describes the frequency and percentage of respondents' answers to the Barrier scale questionnaire. There were 5 (five) subscales of nurse subscale, constraint and limitation subscale, research quality subscale, presentation subscale and accessibility of research results, and item subscale not available on each subscale. Most of the respondents answered disagree and neutral, while some respondents who answered agreed, even strongly agreed with the nurse subscale. Unlike the case with other subscales, the spread of answers was unpleasant, neutral, and amenable.

Table 4 illustrates the average subscale score and the total score of the barrier scale. The subscale of presentation and accessibility of research results as barriers of almost ¾ was low, followed by other item subscales, constraint and constraint subscale, research quality subscale, and consecutive nurse subscales of 70%, 62.2%, 58.9%, and 53.3%. In total, more than half of the barriers were considered low, with an average score of 2.73. Thus, most respondents rated the barrier of the five aspects low, and others felt the barrier was quite high.

Discussion

This study provided knowledge, attitude, understanding of research terms, and confidence to EBP, as well as EBP action on nurses in Padang City. The results showed that more than a few nurses had the same EBP understanding/knowledge response or more than the average score. However, the average score of respondents' understanding of EBP and research terms was in the mid-range of 2.93 and 2.53. In line with research, Rn et al. (2013) reported that nurses had a poor understanding of the term EBP. A possible explanation for this might be that nurses who had learning experience related to research in the educational program were more capable of conducting research (Olade, 2003). The findings seemed to be consistent with other studies which found that nurses' educational level had a statistically significant relationship with their research attitudes (Olade, 2003). Furthermore, previous research revealed that EBP educational interventions have effectively improved the knowledge and skills associated with EBP (Patelarou et al., 2017; Saunders, Vehviläinen-Julkunen, & Stevens, 2016). Besides, education is one of the essential characteristics of nurses because it can affect one's perception, where the higher the level of education, the greater the desire to utilize knowledge and skills in carrying out tasks in a professional manner (Oyoh, Somantri, & Sekarwana, 2017).

Attitudes towards EBP had a higher mean than the mean of knowledge and practice towards EBP, namely, 3.32. Some studies reported that nurses have a positive attitude toward EBP and use of research in practice (Stokke, Olsen, Espehaug, & Nortvedt, 2014; Ammouri et al., 2014; Hussein & Hussein, 2013; Foo, Majid, & Mokhtar, 2011; Rn et al., 2013; White-Williams et al., 2013; Chang, Russell, & Jones, 2010; Wilkinson, Hinchliffe, Hough, & Mphysio, n.d.; Chang et al., 2013; Butler, 2011). A study reported that nurses view the EBP application as an improvement in patient care outcome criteria, research findings are useful in compliance with nursing practice, and EBP encourages patient-centered care (Hussein & Hussein, 2013). The average practice towards EBP was the lowest among others, which was 1.95. In

contrast to the case (White-Williams et al., 2013) in Alabama, the average EBP action score was about two times higher than the current study results, which were 3.41. This was possible due to a higher education level and position as a manager in the workplace so that it had better actions towards EBP. Previous research explained that the need to improve nurses' professional skills through education and training is a fundamental aspect (Oyoh et al., 2017; Rohayani & Banuwati, 2015). Furthermore, Gagan & Hewitt-Taylor (2004) emphasized that the taking and transfer of scientific evidence into practice is difficult and challenging.

Scott and Mcsherry (2008) stated that nurses need to have a good understanding of how to run evidence-based nursing (EBN) and what the concept means and how it differs from other approaches for use in evidence-based actions/practices. Moreover, nurses need to be made aware and involved with the processes associated with obtaining evidence in practice and then identifying what is deemed incompatible with the right to inform their decisions and actions in practice. In this study, note that the average total score for each subscale was in the mid-range of 2.73; 2.96; 2.87; 2.85; 2.80; and 2.37, respectively. It showed, some respondents stated that the barrier felt quite strong, while others felt the barrier was quite low. The nurses' subscale as adopters of grades, skills, and awareness has the lowest average score among other subscales. Nurses considered conducting research worthless and even felt a little benefit of EBP for themselves were the top two things as a barrier on this subscale. However, the nurse item did not want to change/try new ideas, and nurses did not care about the research being the lowest item.

Further to the organizational subscale, it found that inadequate facility items to implement EBP ranked first as a barrier, followed by the limited time for reading study results and the absence of nurse autonomy to change patient care procedures. This finding is consistent with Brown, Wickline, Ecoff and Glaser (2009), who reported that organizational barriers, such as lack of time and nurse autonomy, are the main perceived barriers. Lack of facilities such as unprepared information technology (IT) and library facilities can hamper the implementation of EBP. Also, Eizenberg (2010) pointed out that one of the variables that emerge as EBNP predictors is organizational support, whereas EBNP is more prevalent in workplaces providing computer and internet facilities. Previous research reported that nurses feel satisfied with the support of the team and organization in the form of ease of obtaining and using facilities and advice and assistance in providing nursing services to improve the quality of nurses' work (Somantri & Yudianto, 2018).

The current study found that the second-highest mean score was the limitation of time to implement new ideas and read articles research. Unlike the previous findings Mehrdad, Salsali, and Kazemnejad (2008), the lack of time was felt to be the fifth most frequently cited barrier in research use. This study found that the second-largest average score was the limited time to implement new ideas and reading research articles. In contrast to previous findings, Mehrdad, Salsali, & Kazemnejad (2008) argued, lack of time was felt to be the fifth barrier most frequently cited in the use of research. Pettengill, Gillies, and Clark (1994) suggested that there is a need to investigate the concept of time in terms of personal factors such as motivation and aspiration. The next barrier was low nurse autonomy in patient care procedures. This is consistent with other findings and may be related to the low status and autonomy of nurses in all countries investigated (Chang et al., 2010; Fink, Thompson, and Bonnes, 2005). Besides, Olade (2003) argued the lack of nurses and authority could generally stem from a tradition where nurses do not question nursing practice but focus on tasks assigned to them by co-workers in management positions or by medical staff.

Conclusion

This article points out that more than half of the respondents have a nursing certificate, the mean of attitude exceeds the average score of knowledge/understanding related to EBP, research terms, and practice towards EBP. The evidence from this study shows that there should be an increase in the

nurse's knowledge and skills in evidence-based practice. Also, analyzing research results and anticipating constraints such as better time management between practice and reading research literature, improving nurse autonomy in patient care practices, and providing referral access facilities. These efforts will undoubtedly enhance the implementation of evidence-based practice.

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Determinant Factors of Depression in Patients with Coronary Heart Disease

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Abstract

Depression has been related to poor quality of life and recurrence in CHD patients. It is important to explore factors associated with the depression to prevent problems and to assist with appropriate intervention. Furthermore, the determinants of depression in CHD patients in Indonesia are still unknown. This study aimed to identify the determinants of depression in CHD patients in Indonesia. This study was a quantitative study with a cross-sectional approach. Samples were recruited from outpatient care in a referral hospital in Bandung using a consecutive sampling technique for a-2 month period (n=101). Data were collected using a questionnaire package consisting of a demographic questionnaire, Beck Depression Index [BDI] (II), Zung Self-rating Anxiety Scale, Seattle Angina Questionnaire, and Spirituality Index of Well-Being. Data were analyzed using mean, frequency distribution, chi-square and logistic regression analysis. In terms of its association with depression in CHD patients, low spiritual well-being had the highest odds ratio [OR] (OR = 9.3, 95% CI = 2.968 - 29.451, p <0.01); non-anxious state and medication history had low ORs (sequentially OR = 0.2, 95% CI = 0.067 - 0.644, p < 0.01; OR=0.2 95% CI = 0.062 - 0.772, p < 0.01); PCI (percutaneous coronary intervention) with medication had the lowest OR value (OR = 0.02, 95% CI = 0.002 - 0.278, p <0.01). On the other hand, unmarried status and male gender were identified as confounding variables. Low spiritual well-being was a major predictor of depression in CHD patients, whereas no anxiety, and history of medication, consist of CHD medication and reperfusion therapy contributed to a lower risk of depression. It is recommended to include strategies in improving spiritual well being and managing anxiety to reduce the risk of depression among CHD patients.

Keywords: Acute coronary syndrome, coronary heart disease, depression, determinant factors.

Introduction

Coronary Heart Disease (CHD) could induce psychological problems to its patients. One of those problems is depression. Depression which has been experienced by CHD patients can affect the development of CHD disease and quality of life. Depression can affect the cardiovascular directly by increasing the frequency of heart rate and blood pressure. This condition will increase the oxygen demand and decrease the oxygen supply in the myocardium (Glozier et al., 2013). Furthermore, it will increase the risk of angina or recurrence. Depression also contributes to the formation of thrombosis (Huffman, Celano, & Januzzi, 2010; Lichtman et al., 2014; Williams, Rogers, Wang, & Ziegelstein, 2014) resulting in the formation of new blockages in the coronary arteries and generate recurrence. These conditions can further aggravate the patient's psychological and adversely affect the deterioration of the disease. More over a meta analysis study suggested that depression was a risk factor for death in CHD patients(Wu & Kling, 2016).

Depression has a worse effect on reducing the quality of life in CHD patients than other psychosocial problems such as anxiety. Based on a previous study on CHD patients, it was known that patients with depression had a lower quality of life 5.4 times lower than patients who were not depressed, while anxiety in patients with CHD decreased the quality of life of patients as much as 4.7 times (Nuraeni, Mirwanti, Anna, & Prawesti, 2016). The study also found that depression had the greatest impact on the quality of life compared to other factors, so the incidence of depression should be prevented and should be handled better.

Several factors that affected the incidence of depression based on previous research were anxiety, percutaneous coronary intervention (PCI) and spiritual wellbeing (Gu, Zhou, Zhang, & Cui, 2016; Nuraeni & Mirwanti, 2017; O'Neil et al., 2016) marital status, education level, gender, and poor health condition (Altino, Nogueira-Martins, de Barros, & Lopes, 2017). However, the relationship of various factors, such as demographic data, anxiety, spiritual well-being, angina frequency and physical limitations to the incidence of depression, and which factors have the greatest effect on depression in CHD patients in Indonesia remains unclear. In addition, an overview of the proportion of depression events with treatment options in patients with CAD, in previous studies, especially in Indonesia, is also unclear. Differences in cultural background, social norms, demographic conditions, and health services enable different results on depression and related factors.

The severity of complications that may occur in CHD patients due to depression must be considered and anticipated immediately with appropriate intervention. Investigation factors related to the incidence of depression can be used as the information for anticipating depression incidences. This study was held to identify factors related to depression on CHD patients in Indonesia particularly West Java. These factors were anxiety, spiritual well-being, marital status, and several factors related to health conditions, such as physical limitations, and frequency of angina, and factor related to medication history (medication, PCI with medication, and CABG with medication). This study was expected to provide an overview of the factors that contribute to the occurrence of depression in CHD patients so that efforts to prevent the problems can be done more precisely and effectively.

Method

Data used in this analysis was derived from the "Depression and Frequency of Angina Patients with Acute Coronary Syndrome" study. The study used a descriptive quantitative method with a cross-sectional approach (Lismawaty, Nuraeni, & Rapiah, 2015). The population of the study was patients with CHD who had a history of stable angina, unstable angina, ST myocardial infarction elevation, non-ST elevation myocardial infarction. The sample of the study was taken using a consecutive sampling technique from outpatient care in a referral hospital in Bandung with the criteria that the patient had undergone care at least for a month. Data collection was conducted for 2 months from April to June 2015 and

obtained 101 respondents who were qualified and filled the instrument completely.

There were 10 variables measured from the research, with depression as a dependent variable and 9 independent variables (predictors) i.e. age, sex, marital status, income level, anxiety, spiritual well-being, physical limitations, angina frequency, and medical history. Depression in this study was measured using an instrument of Beck Depression Inventory II (BDI-II) Indonesian version had been tested for construct validity by validation value r = 0,55, p <0,01 and reliability measured with alpha equal to 0,90 Cronbach (Ginting, Näring, Van Der Veld, Srisayekti, & Becker, 2013). Depression was categorized into 2 groups i.e. BDI (II) score ≤ 13 included in no depression and BDI II score ≥ 13 as depression. The Spirituality Index of Well-Being (SIWB) is used to measure the level of spiritual well-being. This instrument had been used in Indonesia with validity test result r = 0.373 - 0.614 (r table 0.195) and reliability 0.805 – 0.825 (Nuraeni et al., 2016). Spiritual well-being was categorized by mean score. If the SIWB score of respondents was greater than SIWB mean score of all respondents then it was categorized as having high spiritual well-being. The mean score of SIWB in this study was 49.14. The Zung Self-rating Anxiety Scale (SAS) was used to measure anxiety. It had a validity score of 0.66, which increased to 0.74 in patients diagnosed with an anxiety disorder and had an alpha cronbach of 0.85 (McDowell, 1989). This variable was categorized as not anxious if the score less than 44 and anxious if the score was in the range of 44 – 100. Seattle Angina Questionnaire was used to measure the physical limitations and frequency of angina. The reliability for the dimensions of physical limitations was 0.83, and for the dimension of angina, the frequency was 0.76 (Spertus, et al., 1995). Physical and anginal variability were categorized into mild (50-100) and moderate-severe (0-49) score.

Characteristics of the respondents (age, sex, income level, and marital status), depression, spiritual well-being, anxiety, physical limitations, and frequency of angina presented descriptively. Bivariate analysis was tested using the chi-square test and the variable relation model with depression was analyzed by logistic regression. The questionnaires and data collection process had undergone an ethical review and had obtained ethical clearance from the Health Research Ethics Committee of Hasan Sadikin Hospital, through a recommendation letter of ethical clearance Number: LB.04.01 /A05/ EC/106/IV/2015.

Results

Table 1 Demographic and Depressive Characteristics of Respondents

Characteristics	Frequency (f)	(%)	BDI-II Score -freq (N=101)				Depression Mean(SD)	p-value
			≤13	%	>13	%		
Depression scores								
≤13	60	59.4	60	100	-		12,25(8,3)	-
>13	41	40.6	-		41	100		
Age								
0–60 years old	60	59.4	35	58.3	25	41.6	12,77(7,94)	0.791
>60 years old	41	40.6	25	60.98	16	39.2	11,5(8,97)	
Gender								
Male	78	77.2	49	62.8	29	37.2	15,8(10,3)	0.198
Female	23	22.8	11	47.8	12	52.2	11,2(7,4)	
Marital status :								
Married	91	90.1	56	61.5	35	38.5	7,1(4,9)	0,188
Not-married	10	9.9	4	40	6	60	17(9)	

incomes/month								
1 – 2,9 million Rp	68	67.3	40	58.8	28	41.2	12,8(8,7)	0,864
≥ 3 million Rp.	33	32.7	20	60.6	13	39.4	11,1(7,5)	
anxious :								
anxious (low-severe)	57	56.4	27	47.4	30	52.6	14,15(8,6)	0,005**
Not-anxious	44	43.6	33	75	11	25	10,1(7,6)	
Physical limitations :								
Minimal-low	98	97	58	59.2	40	40.8	12,2(8,4)	0,795
Moderate-severe	3	3	2	66.7	1	33.3	14,0(4,3)	
Spiritual-wellbeing :								
Low	53	52.5	20	37.7	33	62.3	13(8,4)	0,000**
High	48	47.5	40	83.3	8	16.7	5,9(3,8)	
Frequency of angina								
Minimal-low	90	89.1	55	61.1	35	38.9	11,6(7,6)	0,318
Moderate-severe	11	10.9	5	45.5	6	54.5	17,8(11,9)	
Medical treatment history								
Medication	60	59.4	34	56.7	26	43.3	12,67(7,6)	0,005*
PCI and medication	16	15.9	15	93.75	1	6.25	6,12(5,9)	
CABG (with or without PCI) and medication	25	24.8	11	44	14	56	15.2(9.5)	

Table 2 Final Model Factors Associated with Depression in Coronary Heart Disease Patients

Variables	Categories	Depression on CHD Patients		
		p-value	OR	95% CI
Gender	Male	0.247	2.314	0.560 – 5.570
Marital status	Not-married	0.076	6.621	0.820 – 53.483
Spiritual-wellbeing	Low	0.000**	9.349	2.968 – 29.451
Anxious	Not-anxious	0.007**	0.207	0.067 – 0.644
Medication treatment history	CABG and medication	0.006**		
	Medication	0.018*	0.218	0.062 – 0.772
	PCI and medication	0.003**	0.023	0.002 – 0.278

The results showed that there were three variables that had significant differences in depression status; The variables were anxiety, spiritual wellbeing, and type of medication. The proportion of patients with mild to severe anxiety who experienced depression was more than a half (52.6%) while patients who were not anxious accounted for only 25% with depression; and only 16.7% patients with high spiritual well-being who experience depression, this was different from patients who had low spiritual well-being. The incidence of depression was the majority, it was accounted for 62.3%. The results of the analysis are shown in table 1.

Based on an analysis of the factors studied, including age, sex, marital status, income level, anxiety, spiritual well-being, physical limitations, angina frequency, and medical treatment history, that meet the requirements to be included in the multivariate analysis were gender, marital status, anxiety, spiritual-

wellbeing and medical treatment history. These factors then were involved in the investigation to identified the final model.

The final model of logistic regression analysis showed that not anxious and medication treatment history; and PCI with medication as a predictor variable of low risk of depression and low spiritual well-being factor as a predictor of an increased risk of depression while male and unmarried status variables became confounding variables.

Low spiritual well-being had the highest OR which was 9.349 (9.3). It means that CHD patients with low spiritual well-being had 9 times more risk of depression than those with high spiritual well-being with a probability of depression 90.34%. Meanwhile, the non-anxious variable had a low OR of 0.2 meaning that CHD patients who were not anxious had 0.2-time depression risk than an anxious CHD patient with a 16% probability of depression. The same OR as the non-anxious variable occurred in medication history (OR= 0.2). It means that the medication history had a 16% probability of depression compared to patients who had undergone CABG. PCI with medication was the variable with the lowest OR (0.02) means that CHD patients with a history of treatment had a 2% risk of depression compared to those who had undergone CABG treatment history and medication. However, those risks were also affected by gender and marital status as confounding factors. The final model obtained from the analysis is illustrated in Table 2.

Discussion

Based on the results, the factors that had the highest average depression score were in the category of medium to severe angina which was 17.8 (SD = 11.9). Whereas based on the distribution frequency, more than three-fifths (62.3%) of respondents with low spiritual well-being experienced depression, this factor had the highest incidence of depression compared to other factors. The score of 17.8 in BDI-II was included in the range of the mild depression (mild depression range score 14-19). This means that the average depression score of each category lies in mild depression. However, depression in this category might increase to moderate and severe levels, if it is not given appropriate intervention. The results of this study indicated that depression experienced by CHD patients was in the mild category but with a high-frequency occurrence. These results provided an overview of the need for serious effort to prevent an increase in depression levels thus unexpected adverse outcomes can be avoided (Huffman et al., 2010; Kim et al., 2017; Lichtman et al., 2014).

Spirituality can be a source of coping with patients with chronic depression. patients with chronic diseases benefit greatly from practicing their religious practices and beliefs, especially in individuals who were able to maintain hope, realized the meaning of life, and had peace and use it as a source of coping (Lucette, Ironson, Pargament, & Krause, 2016). Spirituality and religiosity capable of reducing depression is a spirituality that is generating or maintaining hope, belief, and peacefulness (Bekelman et al., 2007; Lucette et al., 2016). It could be obtained by individuals who have good spiritual well-being. Other studies conducted on patients with heart failure showed similar results that high spiritual well-being corresponds to a decrease in depression (Bekelman et al., 2007). Furthermore, Warber et al in a study on CHD patients found that spiritual intervention can be used to increase hope and reduces depression (Warber et al., 2011).

Religion is a part of spirituality, religious dogma, as well as religious practice, can help a person understand spirituality (Burkhardt, M. A., & Nagai-Jacobson, 2005). Islam is a religion embraced by almost all respondents in this study. According to the view of Islam, physical pain or suffering must be seen as a temptation given by God, and man are required to endeavor, be patient, pray and hope only to God (Yaacob, 2013). If someone has had this view then they will have peace and serenity. Based on the results of the study, most respondents have low spiritual-wellbeing (52.5%), this suggests that the majority of patients in this study had not been able to live out their religion and gain an understanding of the meaning and purpose of life, hope, and peace (spirituality). The Management of CHD patients following acute phase in

this population mostly focused on physical aspects including cardiac rehabilitation as well as lifestyle arrangements, but the spiritual aspect to improve the spiritual wellbeing had not been done optimally. In fact, the results of research proved that CHD patients in this study required better spiritual intervention in addition to physical aspects.

Anxiety is a psychosocial problem that is often experienced by CHD patients and associated with a poor prognosis of the illness. Anxiety trigger factors are often difficult to avoid, but the most important is the ability to control anxiety, particularly for CHD patients. Information about the risk of anxiety as well as how to reduce or control anxiety becomes important to be delivered to CHD patients so that patients are able to manage anxiety independently after returning home. This ability to control anxiety becomes very essential because anxiety related to the increase of angina frequency (Rachmi, Nur'aeni, & Mirwanti, 2018) and the increase in the frequency of angina affects the functional status of patients, where according to Shin, Hwang, Jeong, and Lee (2013), functional status in CAD patients significantly influences depression. Furthermore, Nuraeni and Mirwanti (, (2017) stated that anxiety is directly related to depression in CAD patients.

The next factor was patients undergoing CABG with medications; and PCI with medication. The results showed that patients undergoing medication and PCI therapy had a lower risk of depression than patients who underwent CABG. CABG is a reperfusion therapy through surgery, to open coronary blockages bypassing arteries that block the supply of blood to the heart using blood vessels from other parts of the body (Stillwell, 2011). CABG is major surgery, contrary with PCI. PCI is not a surgical procedure, the recovery process of PCI might be shorter and lighter compared to CABG.

Prior studies showed that in the beginning phase, PCI has a higher level of recovery than CABG. It was stated that the quality of life of patients undergoing PCI in the first month increased more rapidly than CABG patients and slightly changed in the three months post-therapy (Doering, Rumpold, Oldridge, & Benzer, 2006). Other than that, the mortality rate in CABG was also higher than PCI at one-year post-therapy (Szyguła-Jurkiewicz, B., Wilczek, K., Przybylski, R., Pacholewicz, J., Trzeciak, P., Styn, T., Zembala, M., Poloński, 2004). Furthermore, stroke was more common in patients undergoing CABG than PCI at 12 months post reperfusion therapy. However, there was different finding from a study which stated that CABG was able to lower the risk of major adverse cardiac or cerebrovascular events (MACCE) higher than PCI (Feldman et al., 2009). These conditions explain that the risk of depression in patients with CABG is higher than patients who undergo PCI, although at low risk, in the first year after therapy. It's also implied that nurses or other health workers could anticipate depression in CHD patients by giving more attention on physical, psychological and spiritual needs particularly in patients undergoing CABG therapy in the first year after therapy.

This study also discovered the confounding factors that could influence depression in CHD patients. Those factors were gender and marital status. Both of these factors can make a difference in the risk of depression. Based on the result of logistic regression, it can be predicted that CHD patients with low spiritual wellbeing status may be at greater risk of depression if the patient is male and unmarried, whereas in female and married patients it is likely to have a lower risk of depression.

This study had several weaknesses. This study did not explain the medication used by the patients. Other than that, this study did not state how long the patients were diagnosed and were undergoing treatment with medication therapy or reperfusion therapy, whereas based on the results of previous research it was known that the duration of any treatment can determine the outcome of the respondents and may have an effect on the risk of depression.

Conclusion

Low spiritual well-being was a major predictor of depression in CHD patients. It was also known that not-anxious, as well as medical history with medication or

reperfusion therapy, might determine a lower risk of depression. However, patients with CABG need more attention because they had a higher risk of depression than other therapeutic options even at very low risk of depression. Prevention of the incidence of depression can be done through efforts to improve spiritual wellbeing and anxiety management in CHD patients.

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We guarantee that the manuscript is original, has never been published elsewhere and will not be submitted to another publisher.

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Relationship External Factors with Internet Addiction in Adolescent Age 15–18 Years

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Abstract

The internet is one form of evolution in the development of communication and technology that affects humans. One result of the internet is a significant change in the pattern of primary social interactions between individuals. The convenience provided by the internet indirectly causes individuals to have high levels of addiction to the internet and tend to show symptoms of addiction. In Indonesia, internet addiction is mainly found in groups of adolescents aged 15-22 years. This study aims to determine the relationship of external factors: academic stress, family attachments and peers with internet addiction in high school adolescents aged 15-18 years. The study design was carried out using a correlational research design with a cross sectional approach. Respondents who contributed in this study were 97 senior high school students. With sample selection, random sampling is done. The statistical test used was chi-square. The results of this study prove that academic stress has a significant relationship with internet addiction value X2 = 7.91 and P = 0.019 <0.05. Family attachments did not have a relationship with internet addiction, the value of X2 = 0.046 and P 1,000> 0.05 and peers did not have a relationship with internet addiction X2 = 0.241 and P = 0.657. Based on the results of this study, it can be said that the school through the school committee to share information or share about the problem of teenagers who experience academic stress, internet addiction, impact and how to overcome them also evaluate the learning process.

Keywords: Academic stress, adolescent, family attachment, internet addiction, peer attachment.

Introduction

The internet is one form of evolution in the development of communication and technology that affects humanity. One result of the internet is a significant change in the pattern of primary social interaction between individuals. Conventional conversations such as face to face have been replaced by internet messages, video calls and social media. This can happen because the weaknesses of conventional communication such as distance and time can be covered by the internet (Young & de Abreu, 2011).

The convenience provided by the internet indirectly causes individuals to have high levels of addiction to the internet and tend to show symptoms of addiction or addictions (Young & de Abreu, 2011). There are various terminologies used by some experts to identify internet addiction as mentioned in such as: internet addiction compulsive internet use phatological internet use, problematic internet use. But almost all agree that the core of the problem of internet addiction is the disruption of the personal lives of individuals and increased tolerance to the internet, namely increasing duration of internet to satisfy self-satisfaction (Young, 1999).

Internet usage has increased in various countries every year. Data World Stats in 2017 found the highest number of internet usage in China with internet users 738,539,792 from a population of 1,388,232,693, around 53.2%, India 34.4% and the United States 87.9%. In Indonesia internet users in 2017 reached 132,700,000 or 50.4% of Indonesia's total population of 263,510,146 becoming internet users who ranked 5th after China, India, the United States and Brazil. In the United States the prevalence of internet addiction in adolescents aged 14-18 years reached 4% (Liu et al., 2007) while in Asian countries such as China reached.

Indications of internet addiction have occurred in Indonesia, mainly found in adolescents. The survey conducted by Internet World Stats (2017) shows that internet users in Indonesia are dominated by ages 15-22, ranging from 42.4%, and 84.7% using the internet via smartphones. Nearly 70% of teen internet users spend more than 3 hours a day using the internet. The three main things that netizens do (internet users) are accessing social media (94%), searching for info (64%), and opening e-mail (60.2%). Adolescents are a group that occupies a sizeable population reaching around 18% or 1.2 billion of the world's population (WHO, 2015).

The projection in Indonesia of adolescents aged 10-24 years reaches 25% of the 256 million population and in Bandung Regency the number of adolescents reaches around 25% of the total population of 3,596,623 people (BPS, 2015). With the large population of adolescents it is expected to be the next generation that has optimal quality performance according to their growth and development. Adolescents experience periods of growth and development. Individuals experience changes from childhood to adulthood followed by biological, psychological and social changes (Santrock, 2005). Kim (2008), adolescents who are often said to be at risk groups start from the age of 12-18 years, and the age most at risk is age 16, at this age adolescents enter the age of high school (SMA).

Research conducted by Xu et al. (2012) found that high school adolescents did not have good self-control, poor self regulation and low cognition compared to adolescents who had taken lectures. This is supported by Kuss's research (2013) which found high school adolescents had the desire to be free like adults. The results of the search for some literature show that internet addiction in adolescents can be influenced by two factors, namely internal factors and external factors. Internal factors include loneliness low self-esteem and neuroticism personality (Karimpoor et al., 2013).

External factors include adolescents who have families who have problems in family function (Tsitsika et al., 2011; Park et al., 2013), study load and peer influence (Wang at al., 2011). The existence of problems in the development of adolescents can cause mental health problems if not resolved properly. Various adolescent mental health problems are such as learning difficulties, juvenile delinquency and sexual behavior problems (Davdson, 2006).

Therefore, mental health nurses have an

important task in helping these problems. Activities that can be done by nurses in providing services and guidance in schools are primary prevention by conducting social programs that aim to create an environment to improve adolescent health. Nurses can also do secondary prevention such as resolving cases found in adolescents. In addition to primary and secondary prevention, nurses can provide therapeutic support for children and adolescents through psychotherapy, counseling, family therapy and counseling in the school and family environment (Kusumawati, 2010).

Baleendah District is one of the Districts in Bandung Regency which has a population of 251,996 people with a school age of 7–12 years with 4,157 people, 13–15 years old school age 4,663 people, school age 16–18 years 4,663 people (BPS, 2015). The existence of school age in Baleendah District is a potential for the future of the younger generation to progress in Baleendah sub-district. The Dikdasmen data of the Ministry of Education and Culture (2018) mentions Baleendah District as a sub-district that has a high school distribution of 8 high schools with 3,682 students.

A preliminary study conducted on 10 high school students domiciled in Baleendah Subdistrict found 4 students using the internet since elementary school (SD), 4 students using the internet since junior high school (SMP) and 2 students using the internet since high school (SMA) . Four students say they use the internet more than 5 hours per day and four students use the internet less than 5 hours per day. All students interviewed said they often visited the Google site for school assignment searches, then accessed youtube, online games, and social media such as Instagram, Facebook, line, Whats App and vlog.

All students interviewed said using whatsapp and line for communication facilities. Six students said they felt anxious, depressed, lonely, uncomfortable, afraid to lose the latest information, if they did not use the internet they would try to be able to access the internet immediately by filling out internet quota, searching for internet cafes and free wi-fi. Furthermore, two students said it was normal to not use the internet. The results of the interview also found that all students had smartphones and four students were facilitated by internet services installed in their homes so that students actively played online games. Three students also said that they had never attended school because they played online games at the internet cafe.

The results of surveys and observations carried out in several high schools in Baleendah Subdistrict, there are five schools that allow students to bring smartphones and some even have wi-fi facilities in their school. Activities at recess in the canteen or in the park are seen by some students using laptops to use Wi-Fi facilities in schools, some students are using their smartphones to open their social media, such as: Facebook, line, Instagram and Whats App.

Method

Design research by cross sectional aproach, uses a correlation analysis research design that aims to determine the relationship between independent variables and the dependent variable conducted in September - October 2018 This research permit No : 070/1092-CADISDIKWIL VIII from Educator Authorietis West Java Province. The research with population of 3682 students from 8 high schools in Baleendah District, Bandung Regency . Using random sampling with Taro Yamane or Slovin formula and sample results of 97 students with inclusion criteria such as: high school students who have ages 15-18 years, students who experience internet addiction are based on the results mild dependence internet addiction with screening using an Internet Addiction Test. The research using Educational Stress Scale for Adolescents (ESSA), Inventory Parents and Peer (IPPA) and Internet Addiction Test (IAT)

Results

A. Characteristic of respondents

Based on table 4 above, it can be seen the sociodemographic description of the

respondents most (80.4%) of respondents live with their parents. Nearly half (42.3%) of respondents use the internet to communicate. If seen by the duration of internet usage more than half (64.9%) of respondents use the internet more than the same as 6 hours per

Table 1 Distribution of Frequency Characteristics of Adolescents 8 Senior High Schools in Kecamatan Baleendah Kabupaten Bandung (n = 97)

Characteristics	Frequency	Percentage (%)
Gender		
Male	46	47.4
Female	51	52.6
Total	97	100

Table 2 Distribution of Sociodemographic Frequency of Adolescent High School in Baleendah District of Bandung Regency (n = 97)

Sociodemography	Frequency	Percentage (%)
Living Together		
Both parent	78	80.4
One of the parent	10	10.3
Guardian	9	9.3
The main purpose of using the internet		
Social Network	27	27.8
Game Online	13	13.4
Finding Information	16	16.5
Communication	41	42.3
Duration of internet usage in a day		
≥ 6 hours /day	63	64.9
< 6 hours/day	34	35.1

Table 3 Frequency Distribution of Academic Stress, Family Attachment and Peers and Internet Addiction (n = 97)

Academic Stress	Frequency	Percentage (%)
Low	16	16.5
Medium	80	82.5
Height	1	1.0
Parent Attachment	Frequency	Percentage (%)
Medium	45	46.4
Height	52	53.6
Peer Attachment	Frequency	Percentage (%)
Medium	50	51.5
Height	47	48.5
Internet Addiction	Frequency	Percentage (%)
Mild dependence	27	27.8
Modetare dependence	70	72.2

day.

Based on table 4.3 above, it can be seen a description of academic stress, family attachments and peers. In the academic stress variable, most (82.5%) respondents experienced academic stress in the moderate category. At family attachments more than half (72.2%) of respondents included in the medium category. Meanwhile, internet dependence, that more than half (72.2%) of respondents experience moderate dependency.

B. Distribution Mean, Standar Deviasi, Nilai Minimum - Maksimum

Based on table 4.5, the statistical test with chi-square showed that there was a significant relationship between academic stress and internet addiction with a value of P = 0.019 <0.05. Attachments of families with internet addiction with a value of P =

Table 4 Distribution Mean, Standar Deviasi, Nilai Minimum - Maksimum

Variabel	Mean±SD	Minimum-Maximum
Akademic Stress	90.34±11.16	62–112
Parent Attachment	90.58±9.98	62–114
Peer Attachment	43.99±6.25	29–61
Internet Addiction	54.58±11.02	21–73

Table 5 Correlation Between Academic Stress, Family Attachment and Peer Friends with Internet Addiction In Adolescents High School in Baleendah District, Bandung Regency.

Variabel	Chi-Square (X^2) P-Value
Akademic stress	X^2 = 7.951
	P= .019**
Parent Attachment	X^2 = .046
	P= 1.000
Peer Attachment	X^2 = .241
	P= .657

1.000> 0.05) which showed no significant relationship between family attachments and internet addiction. Whereas peer attachment with internet addiction with P value = 0.657> 0.05 indicates that there is no significant relationship between peer attachments.

1. Overview of Academic Stress

In the academic stress variable, the majority (82.5%) of respondents experienced academic stress in the medium category, the results of this study found that academic stress was the main source of stressors for students. Teenagers easily experience stress because adolescents experience a period of transition from children to adults which is characterized by the existence of biological, psychological and social changes (Santrock, 2005) Stroud et al., (2009) stated that adolescents who are easily stressed are adolescents ranging in age from 14-19 years, where at that age adolescents entering junior high school (SMP) and senior high school (SMA) are in harmony with respondents who are subjects of research.

The results of this study show that academic stress has the highest score on question number 6 “I feel depressed when studying” with a score of 338. The results of the study are in line with Schafer’s research (Rafidah et al., 2009) which found that the things that caused students to feel stressed were stressors stemming from academic problems such as stress in learning, very short time, making papers, examinations, and instructors who boring. Pressure and obstacles on students.

2. Overview Parent Attachment

At family attachments, most (53.6%) respondents are included in the high category. The results of this study indicate that family

attachments in adolescents aged 15-18 years in Baleendah District High School are very good. This is in line with the characteristics of adolescents in this study where 80.4% lived with both parents. Family is the main place for adolescents in the process of forming social skills and emotional development, especially the condition of adolescents who are entering a transition period so that they get the foundation in shaping their ability to face the next life so they can be successful people in society.

Armsden & Greenberg (2009) in his research suggesting parental attachment is a significant predictor of adolescent self-esteem. This is supported by Wilkinson's (2004) study which found high school adolescents who had good attachment to their parents would contribute to their psychological well-being. Furthermore, the Ahkter study (2014) found a difference in adherence to adolescent boys and girls. In general, female adolescents are considered to have a higher attachment than adolescent boys, this is because young women have more time at home than adolescent boys. This study also found a difference in attachment between fathers and mothers in terms of care, fathers are considered more authoritarian in terms of care and mothers are considered more sensitive and care about the needs of adolescents. The results of this study are supported by the study of Deng et al (2013) who found that the high alienation of mothers and children has a very important role in predicting problem behavior in adolescents.

Triyanto (2014) The research objective was to identify the influence of family support for adaptive behavior of adolescent puberty. Quasi-experimental design approach without pre-posttest control group design was applied. Respondents was selected by purposive sampling in Baturaden. Adaptive behavior that increased from 60% to 97% after optimization family support. Difficulties of parents in providing family support when directed to learn, to establish open communication, and teenagers emotional. There is the influence of family support optimization significantly to the increase of adaptive behavior adolescentswith p value of 0.001.

3. Overview Peer attachment

The results of this study indicate more than half (51.5%) of respondents have peer attachments that have a moderate category. This means that peers have an important role in the lives of adolescents. Attachment changes occur when teens learn and develop relationships with individuals other than family. Peer attachment is a bond that occurs between adolescents and peers who relate to thoughts, feelings and emotions (Baroccas, 2009).

Wilkinson's (2004) study found adolescence's attachment to peers was interwoven because of the personal experiences of adolescents from interactions with their parents. Safe attachment with parents is the initial source that determines how teens will evaluate themselves and interact with others. It is believed that the quality of adolescent relationships with parents has a good impact on the self-concept of adolescents in establishing harmonious relationships with their peers.

4. Overview Internet Addiction Levels

Based on data on internet dependence (72.2%) respondents experienced moderate dependence and (27.8%) respondents experienced mild dependence. In the era of globalization, technological advances have a major influence on society, especially adolescents. Teenagers can easily access the internet wherever and whenever. This is supported by increasingly sophisticated facilities such as smartphones with several advanced features in them and supported by more and more spots found that provide free wifi.

Greenfield, (1999) in Young and Abreu (2011) explains that the internet is so attractive, because it contains colors, movements, sounds, interactivity and infinite information that causes a person to feel comfortable and unaware of a problem. In adolescents the internet is more used for entertainment facilities than task search so that it can increase internet dependence (Floros & Siomos, 2013). Hardanti (2013) factors underlying the behavior of playing online games at school age The results showed that 56% and 60% addiction behavior influenced by motivational factor and attraction factors.

Based on this finding, it is recommended to treated and prevent games addiction behavior in children based on collaboration between family, school and health provide.

The dependence of the internet on adolescents aged 15–18 years in SMA Kecamatan Baleendah Bandung Regency is also influenced by several aspects, one of which is the availability or coverage of the internet either through smartphones or wi-fi installed in the school environment. The availability of the internet is not only in urban areas, inversely proportional to the research conducted by Mohsin, Mishra & Sahu (2016) who found that urban teenagers use the internet more because of affordability of access and they have more knowledge about technological developments especially the internet. Urban teenagers are more consumptive in terms of internet usage compared to teenagers in rural areas.

The results showed that the majority of high school adolescent respondents in Baleendah District, Bandung Regency (42.3%) used the internet for communication media. If seen by the duration of internet usage more than half (64.9%) of respondents use the internet more than the same as 6 hours per day. In line with the research of Block (2008) and Wu, Lee, Liao, and Chang (2015), Beard (2005) states that some diagnostic criteria needed to enforce someone experiencing internet addiction include being busy with internet activities, increasing the amount of time needed to access the internet , fails to control internet usage, is nervous, depressed, depressed or irritable when trying to reduce or stop using the internet. In addition to the criteria above Tao et al. (2010) stated that a person is said to experience internet addiction if using the internet for 6 hours or more per day and this has been going on for at least 3 months. Another opinion states that someone is said to experience internet addiction if using an average of 38 hours or more per week (Young in Koc, 2011).

5. Relationship between Academic Stress and Internet Addiction

Based on table 5, the statistical test with chi-square showed that there was a significant relationship between academic stress and internet addiction with a P value = 0.019 <(0.05). In line with Putri's research (2017) the results of the Rank Spearman test with a value of p 0.000 (<0.05) showed that there was a positive relationship between academic stress and internet addiction and the value of r = 0.525 showed a moderate strength of meaningful relationships, the higher academic stress the higher the teenager is at risk of experiencing internet addiction.

Similarly, the Jun & Choi Research (2015) examined the relationship of academic stress mediated by negative emotions and its relationship to internet addiction. The results of this study indicate that adolescents who experience academic stress may be at risk of internet addiction especially when accompanied by negative emotions. Academic stress can be felt with various school assignments, the number of quizzes, and exams, which is in line with Lal (2014) study that found academic stress can arise due to adolescents having to face many academic demands, such as school exams, answering questions in class, showing progress on subjects, understanding what taught by teachers, competing with classmates, and fulfilling the expectations of teachers and parents of students.

Prolonged academic stress can also result in losing interest, decreasing concentration and avoiding problems that can cause students to look for other activities to reduce academic stress such as accessing the internet (Jun & Choi, 2015). According to Wang, Zhou, and Lu (2011), the risk factors for adolescents experiencing internet addiction are related to stress, resulting in bad relationships with teachers and friends and experiencing conflict within the family.

Academic stress that occurs in high school adolescents aged 15–18 years in Baleendah Subdistrict due to pressure while studying with a value of 388 is highest among other statements. This shows various factors, one of which is because the learning process and method are in accordance with Schafer (Rafidah et al., 2009) who found several things that can cause students to feel stressed are stressors that originate from academic problems such as stress in learning, very short time, boring papers, examinations, and teachers.

6. Relationship Between Parent Attachment with Internet Addiction

The results showed that there was no relationship between family attachments and internet addiction with a value of P = 1.000> (0.05). This finding is different from the results of a previous study conducted by Putri (2017) in SMA in Andir Sub-District, Bandung, where there was a relationship between family attachments and internet addiction with a value of p = 0.000 (< 0.05). The difference in the results of this study with Putri's research (2017) is likely caused by several factors, including:

1) differences in the place of study, Putri (2017) conducted a study in Bandung City, a researcher in Baleendah District, Bandung Regency.The condition in urban areas as we know is found by many parents who are busy with their work, so that supervision on their internet use for their children is neglected. In line with research conducted by Weistein & Lejoyeux (2010) which found a lack of supervision from parents is a factor that can cause teenagers to experience internet addiction.

2) at Baleendah concern for parents of their children in the high category. Parents always devote love and attention to children will make them obey the rules and responsible for their duties. Nevertheless the level of internet dependence on adolescents aged 15–18 years in SMA Baleendah District is in the moderate category.

This can occur because of a lack of parental knowledge about how to use the internet and how to effect internet usage. So that children are left to use the internet at will. The results of research conducted by Chalim (2018) the role of parents in the digital era are required to be able to supervise and control their children in using the internet. Controlling internet usage does not have to be done tightly, it can be done in a persuasive way that is respecting children's privacy.

Parents in the digital age are expected to be able to understand the use of the internet and the applications contained in it.

3) other factors that make it possible to cause a moderate level of internet dependence is the availability of wifi in schools that can be accessed and students are allowed to bring smartphones. The ease of using the internet can be facilitated by the presence of wi-fi installed in schools. Certain areas will be met by students such as: parks, canteens and libraries that have Wi-Fi installed.

When interviewing some respondents from 8 high schools in Baleendah Subdistrict, only one high school had rules for students to be prohibited from using the internet and smartphones while in the school environment. Seven other high schools do not have such rules and Wi-Fi has been installed which can be accessed freely by their students.

7.Relationship Peer Attachment with Internet Addiction

The results showed that there was no relationship between peer attachment and internet addiction with a P value of 0.657> (0.05) indicating that there was no significant relationship between peer attachments. This finding is different from the Putri (2017) study which found a link between peer attachment and internet addiction. The results of this study are also different from the results of other studies conducted by Muna (2016), there is a significant influence between peer interactions with the intensity of internet use in class XI Yogyakarta 2 nd Vocational High School. Lin, Ko, and Wu (2011) and Morsünbül (2014) suggest teenagers who do not have safe attachments or more alienation with peers such as disdain, are positively related to their internet addiction.

This difference is likely caused by the purpose of internet use in adolescents in this study, namely communication and social networking. The results of previous studies conducted by Putri (2017) found the purpose of teenage internet use in SMA Andir District, Bandung City for online games and information seeking. In line with the results of the study of Pawlowska, Zygo, Potembska, Kapka-skrzypczak, & Dreher, (2015) which compares the level of adolescent dependence on the internet in urban and rural areas. The results of their study found that there were significant differences between internet use of urban and rural teens. Rural teenagers generally only use the internet for information seeking purposes such as school assignments while social interaction is still very good with peers in real life. Whereas urban teenagers are more comfortable in using the internet

not only to seek information but for various purposes including entertainment such as online games, pornography and social media activities.

The strength of this study compared to previous research, is that researchers in data collection use affordable populations by screening which has a minimum criteria for mild dependency. With the number of samples 97 obtained by random sampling

8. Limitation of Research

This research has been carried out by the scientific method. But in its implementation there are still limitations to research such as: there are still respondents who ask when filling out the questionnaire. This happened because respondents did not focus when explaining or not understanding the questions in the questionnaire.

Conclusion

The results of this study prove that between academic stress, family attachment and peers with internet addiction, and from these three factors only academic stress has a significant relationship with internet addiction in high school students aged 15–18 years in Baleendah District, Bandung Regency.

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The Different of Finger Handheld and Deep Breathing Relaxation Techniques Effect on Reducing Heart Rate and Stress Levels in Primary Hypertension Patients

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Abstract

Stress and hypertension have a reciprocal relationship where hypertension can increase stress, and stress will also increase blood pressure. Therefore we need an effort to control stress in patients with hypertension to prevent increasing blood pressure that can cause complications such as congestive heart failure, myocardial infarction, and stroke. The study aimed to determine the difference between finger handheld and deep breathing relaxation techniques to decrease heart rate and stress levels of primary hypertension patients. The research design used a quasi-experimental design. The research was conducted in Kembaran and East Purwokerto District, Banyumas, Indonesia. There were 50 respondents (25 finger handheld relaxation group and 25 respondents in deep breathing relaxation group). Heart rate and stress levels were measured before and after treatment using heart rate (HR) recordings on digital tensimeter and Subjective Units of Distress Scale (SUDS). Data analyzed using a paired t-test and independent t-test. The results showed there were significant differences in HR and stress levels before and after finger handheld relaxation ($p = 0.000$). There were significant differences in HR ($p = 0.010$) and significant levels of stress ($p = 0.000$) before and after deep breathing relaxation. There was a significant difference in HR ($p = 0.02$) but there was no significant difference in stress levels ($p = 0.23$) after treatment (post-test) between those who received finger handheld and deep breathing relaxation techniques. Conclusion: finger handheld and deep breathing relaxation techniques are equally effective in reducing stress levels in primary hypertension patients. Finger handheld relaxation technique is more effective in reducing HR than a deep breathing relaxation technique.

Keywords: Finger handheld, heart rate, hypertension, relaxation, stress.

Introduction

Hypertension becomes one major health problem in the World. The World Health Organization (WHO) and The International Society of Hypertension (ISH) recorded the number of people suffering from hypertension who have already reached 600 million people throughout the world and 3 million people suffering from hypertension die each year. Hypertension is classified into a non-contagious disease with its highest number of 57.87% in Central Java in 2015 (Dinas Kesehatan Provinsi Jawa Tengah, 2016). Meanwhile, Banyumas Regency ranks fourth with 39.52%. Based on data obtained from the Health Office of Banyumas Regency, patients with hypertension annually increase. In 2016, there were 81,862 people with hypertension at the age of ≥ 18 years old. Kembaran and East Purwokerto are two districts with those suffering from hypertension (Dinas Kesehatan Kabupaten Banyumas, 2016).

Hypertension may be influenced by several factors, such as age, sex, genetic, smoking habits, obesity, stress, exercising habits, coffee consumption, high sodium diet and alcohol consumption (Andria, 2013; Wahyuningsih & Astuti, 2013; Rahmawati & Daniyati, 2016). The research conducted by Mucci et al. (2016) stated that psychological stress significantly influences the systolic blood pressure. An individual with a high-stress level has a 21% higher risk to experience high blood pressure than those with lower stress level (Gasperin et al., 2009). If the stress increases, the hypertension risk will also increase (Liu et al., 2017). Uncontrolled hypertension causes complex problems experienced by patients as a complication of hypertension. The patient's ability to perform self-care agency, psychological stress control is very important and recommended for controlling hypertension (Dendy et al., 2018). Chronic stress and mal-adaptive ability to respond to stress may strongly influence the blood pressure increase (Sparrenberger et al., 2009). When experiencing stress, the arteries which supply the organ functions will be narrower than the blood pressure may increase (Yulianto et al., 2017). Stress condition will cause artery constriction that results in increasing perifer resistance. This condition results in hypertension.

The research conducted by Erris and Rahman (2016) shows that people suffering from hypertension will experience stress because when facing problems, they are unable to control their emotions and anger. They also do not have an awareness to find information to deal with their stress. In addition, the respondents are also less active to do self-relaxation to reduce their own stress. Psychological or mental stress was associated with an increased risk for hypertension (Hu et al., 2015; Jadhav et al., 2014).

Stress stimulates the sympathetic nervous system to increase the cardiac output and arteriolar vasoconstriction, which eventually increases the blood pressure. Stress also stimulates the adrenal gland to release adrenal hormones and stimulate the heart to beat faster and stronger than the blood pressure may increase (Haryono et al., 2016; Ranabir, 2011). Thus, an effort to control stress in patients suffering from hypertension is greatly required to prevent the increasing blood pressure which may cause complications, such as congestive heart failure, myocardial infarction, and stroke.

One technique to reduce stress is relaxation. This technique can deliberately overcome and repair patients to deliberately make their body muscles (Sulistyarini, 2013). Effective relaxation therapy for reducing depression, coping, and stress (Kashani et al., 2012). Relaxation therapies that can be used to reduce pain and recovery are Finger Held and deep breathing (Yulastuti, 2015; Sari, 2016; Mason et al, 2013) Relaxation of finger holding is part of Jin Shin Jyutsu (Japanese acupressure)) which is very easy and easy to do for anyone related to fingers and energy flow in our body (Pinandita et al., 2012; Idris & Astarani, 2017). This technique uses simple hand touches that involve breathing to balance the energy in our body to control our emotions to be relaxed (Sari, 2016; Idris & Astarani, 2017). This relaxed feeling can eliminate muscles and reduce difficulties (Yuliastuti, 2015). Deep breathing relaxation can increase oxygen saturated and relax condition (Mason et al, 2013). The results of research conducted by Rosliana Dewi, et al (2018) provide five-finger relaxation therapy that improves sleep quality in breast cancer

patients.

This research aims at examining the difference between finger-holding and deep breathing relaxation techniques on reducing the heart rate and stress levels in patients suffering from hypertension.

Method

This quasi-experimental research compares two treatment groups (finger held and deep breathing relaxation) as an independent variable with heart rate and stress level as dependent variables among primary hypertension patients. This research was conducted in Kembaran and East Purwokerto district which has a high prevalence of patients suffering from high hypertension in Banyumas. The population in this study were all hypertension patients in the PUSKESMAS Kembaran Timur Purwokerto in the last 3 months.The sampling technique was a Purposive sampling approach. The inclusion criteria in this research are patients suffering from primary hypertension with the blood pressure of ≥ 140/90 mmHg and willing to become the research respondents. Meanwhile, the exclusion criteria in this research are patients who do not participate in the therapy, with hearing problems, and experience complications with the other diseases (kidney disease, heart disease, diabetes mellitus, and stroke). The obtained research samples are 50 patients, from the results of calculations of the average hypothesis test of two populations. consisting of 25 patients receiving finger-holding relaxation techniques and 25 patients receiving deep-breathing relaxation techniques that guided by the researcher for 15-20 minutes.

The demographic questionnaire was used to identify the respondents' characteristics including age, sex, and blood pressure. The Subjective Units of Distress Scale (SUDS) was employed to measure the stress level. The inconvenience feeling measured with SUDS greatly depends on the current situation that it is quite sensitive to measure the occurring stress level changes (Astri, 2012). SUDS consists of 11 multilevel answer points of Likert scales, starting from 0 points, in which there is no stress at all or relax up to 10 points (the highest stress level). To measure the heart rate (HR), a record on the Medel digital tension-meter licensed by the European hypertension association with technically identical to KD-5915.

The research data were analyzed using univariate and bivariate analysis. Univariate analysis is conducted on each research variable to explain the characteristics of age, sex, systolic blood pressure and diastolic blood pressure then presented in the form of distribution, frequency and percentage.

Data analyzed using a paired t-test and independent t-test. Bivariate analysis is conducted to determine the heart rate and stress level differences in the control and intervention group before and after treated with finger-holding and deep-breathing relaxation techniques. Data analyzed using a paired t-test and independent t-test within spss 16. The degree of significance is determined by the if value of sig $p \leq 0.05$ then the hypothesis of the study is accepted. This research is conducted after obtaining the approval from the board of health research ethics, Faculty of Medicine, Sebelas Maret University, Surakarta (No. 221/II/HREC/2018).

Results

Respondents' Characteristics

The respondents' characteristics in this research are shown in Table 1 and 2. The respondents are mostly female at the age of more than 60 years old. The respondents' characteristics illustrated in table 2 show that most respondents have the blood pressure of > 160 mmHg. Based on the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC), those respondents are classified into hypertension stage 2. There is no systolic and diastolic blood pressure significant difference in the group treated with a finger-holding relaxation technique and the group treated with and deep-breathing relaxation technique that eventually reduces the blood pressure influence on the heart rate and anxiety level measurement result.

After the age of 60 years old (elderly), the

Table 1 Respondents' Characteristics Based on Age and Sex

Characteristics	Finger-holding group (n=25)		Deep-breathing group (n=25)		p
	f	%	f	%	
Age (Year)					
45–59 (middle age)	5	10	0	0	0.013
60–74 (elderly)	20	40	24	48	
75–90 (old)	0	0	1	2	
Mean (SD)	61.80	(6.61)	68.84	(4.85)	
Sex					
Male	6	12	2	4	0.247
Female	19	38	23	46	

Table 2 Respondents' Characteristics Based on Systole dan Diastole Blood Pressure

Characteristics of Blood Pressure	Finger-holding group (n=25)		Deep-breathing group (n=25)		p
	Mean	SD	Mean	SD	
Sistole	164.08	12.93	168.28	21.94	0.415
Diastole	101.64	9.37	98.52	14.94	0.381

prevalence of hypertension increases due to the vascular changes resulted from the plaque accumulation at the vascular endothelium which may increase the peripheral resistance and resulted is in blood pressure increase. Age factor greatly influences the presence of hypertension. The increasing age also increase the risk of experiencing hypertension due to physiological changes resulted from the body degenerative processes.

The hypertension experienced by the women is higher than that experienced by men after reaching the age of 60 years old as women experience menopause (Smeltzer & Bare, 2002). After menopause, the women usually experience hormonal changes which may increase the fat accumulation in vascular endothelium that the hypertension risk continuously increases. Based on the statistical data, there is a significant relationship between mental stress and hypertension in men (Jadhav et al., 2014).

The respondents' characteristics illustrated in table 2 show that most respondents have the blood pressure of > 160 mmHg. Based on the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC), those respondents are classified into hypertension stage 2. There is no systolic and diastolic blood pressure significant difference in the group treated with finger-holding relaxation technique and the group treated with and deep-breathing relaxation technique that eventually reduces the blood pressure influence on the heart rate and anxiety level measurement result.

The Heart Rate and stress level difference before and after the intervention.

The result of the analysis shows that there is significant heart rate and stress level difference before and after the intervention. After the intervention, both groups show the decreasing heart rate and stress level (see Table 3).

The stress level measurement in both

Table 3 The Heart Rate and Stress Level of Patients Suffering from Primary Hypertension Before and After Treatment

Relaxation Group	Before		After		p
	Mean	SD	Mean	SD	
Finger-holding					

Heart Rate	84.80	9.40	80.40	9.08	0.000
Stress level	4.16	2.34	3.12	2.11	0.000
Deep-breathing					
Heart Rate	90.16	12.09	87.84	12.53	0.010
Stress level	4.96	2.49	3.84	2.29	0.000

Table 4 The Pre and The Post-Test Difference Between The Patients' Heart Rate Treated with Finger-Holding and Those with Deep-Breathing Intervention

Variable	Finger-holding		Deep-breathing		p
	Mean	SD	Mean	SD	
Heart Rate					
Pre Test	84.80	9.40	90.16	12.09	0.09
Post-test	80.40	9.08	87.84	12.52	0.02
Decrease	4.40	3.90	2.32	4.15	0.07
Stress level					
Pre Test	4.16	2.34	4.96	2.49	0.28
Post-test	3.12	2.11	3.84	2.29	0.23
Decrease	1.04	1.02	1.12	0.78	0.08

groups with SUDS shows that the average stress level is categorized into moderate before treatment but changed into mild after the treatment. It shows that there is a significant stress level decrease experienced by both groups.

The heart rate measurements before treatment in both groups show that there is no significant difference, yet after the measurement, there is a heart rate significant difference (see table 4). The average decreasing heart rate in the group treated with finger-holding relaxation intervention is better than that treated with deep-breathing relaxation intervention, in which the heart rate decrease in the group treated with finger-holding relaxation intervention is 4.4 times/minute, while that in the group treated with deep-breathing relaxation intervention is 2.32 times/minute.

The result of the analysis on stress level shows that there is no significant difference in both groups' pretest and posttest result. However, the average stress level decrease experienced by the group treated with deep-breathing relaxation intervention is better than the group treated with finger-holding relaxation intervention. The stress level experienced by the group treated with finger-holding relaxation intervention decreases by 1.04, while the group treated with deep-breathing relaxation intervention decreases by 1.12.

The result of analysis on stress level shows that there is no significant difference in both groups' pretest and posttest result. However, the average stress level decrease experienced by the group treated with deep-breathing relaxation intervention is better than the group treated with finger-holding relaxation intervention. The stress level experienced by the group treated with finger-holding relaxation intervention decreases by 1.04, while the group treated with deep-breathing relaxation intervention decreases by 1.12.

Both interventions are effective to reduce the stress level. Finger-holding relaxation intervention may relieve the stressful feelings, reduce tension, increase comfort, and help deal with the uncontrolled situations due to the stress without changing the underlying stress causes (National Center on Domestic Violence, Trauma & Mental Health, 2014). Meanwhile, deep-breathing relaxation may effectively induce the development of mood and control the stress (Perciavalle et al., 2017).

The decreasing stress level and heart rate positive influence the patients suffering from hypertension. The combination of the

increased mental and physical stress may significantly increase the systolic blood pressure (Trapp et al., 2014), while the decreasing stress level may increase the telomerase gene expression and reduce the blood pressure (Duraimani et al., 2015).

Discussion

The heart rate decrease experienced by both groups is due to the finger-holding and deep-breathing intervention to result in the relaxation response. The relaxation response may influence the limbic system in synchronizing the brain waves to the wave α to create a relaxing feeling responded by hypothalamus by reducing the secretion of Corticotropin-Releasing Hormone (CRH), which may also stimulate the anterior pituitary gland to reduce the secretion of Adrenocorticotropic Hormone (ACTH). The sympathetic stimulation decrease may reduce the heart rate frequency. The result of this research is in line with that conducted by Perciavalle et al. (2017) stating that the relaxation techniques may improve mood and reduce the heart rate and cortisol salivary level.

Both interventions are effective to reduce the stress level. Finger-holding relaxation intervention may relieve the stressful feelings, reduce tension, increase comfort, and help deal with the uncontrolled situations due to the stress without changing the underlying stress causes (National Center on Domestic Violence, Trauma & Mental Health, 2014). Meanwhile, deep-breathing relaxation may effectively induce the development of mood and control the stress (Perciavalle et al., 2017). Pursed lips breathing (PLB) is a breathing technique that can be used to help breathe more effectively and can increase oxygen saturation. Pursed lips breathing trains Chronic obstructive pulmonary disease sufferers to exhale slower, so that they will breathe easier and feel comfortable, both when resting (Eko et al., 2017).

The finger-holding relaxation technique is more effective to reduce the heart rate because this technique combines the finger-holding and deep-breathing technique to control emotion and stress (National Center on Domestic Violence, Trauma & Mental Health, 2014). The controlled stress may result in the decreasing cortisol hormone and sympathetic response that eventually reduce the heart rate. Deep-breathing may activate the baroreceptors which stimulate the parasympathetic nerves to reduce the heart rate (Mason et al., 2013).

The decreasing stress level and heart rate positive influence the patients suffering from hypertension. The combination of the increased mental and physical stress may significantly increase the systolic blood pressure (Trapp et al., 2014), while the decreasing stress level may increase the telomerase gene expression and reduce the blood pressure (Duraimani et al., 2015).

Limitation study

The intervention in this study was only one session. There is an age difference between the group held by the fingers and the group breathing deeply. this is due to weaknesses in the sampling technique carried out by researchers.

Conclusion

Both finger and deep breathing techniques are equally effective in reducing stress levels experienced by patients suffering from primary hypertension. The relaxation technique holding the fingers is more effective in reducing heart rate than the deep breathing relaxation technique. The research needs to be continued with several different interventions and measurements and sampling techniques

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Characteristics of Patients, Self-Efficacy and Quality of Life among Patients with Type 2 Diabetes Mellitus

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Abstract

Diabetes mellitus as a chronic disease requires a long-term care, which influence the quality of life (QOL). A mechanism perceived by the patients who engage in long-term treatment, such as self-efficacy (SE) is prerequisite for the success of disease management. The study aimed to identify the relationship between characteristics of patients, SE and domains of QOL among patients with type 2 diabetes mellitus (T2DM) living in community. The study used a correlational analytical with a cross-sectional approach and recruited 105 patients with type 2 diabetes in Sukasari Public Health Center, Tangerang. Self-administered questionnaires were used to measure sociodemographic of T2DM patients, while the Diabetes Management Self-Efficacy Scale (DMSES) UK and Asian Diabetes Quality of Life (Asian DQOL) were used to measure SF and QOL, respectively. Data were analyzed using Spearman Rank-Order Correlation. The study revealed that characteristics of patients, including age and period of illness were negatively associated with memory and cognition domains of QOL, while years of education positively associated interpersonal relationship domains of QOL. For SE, it was positively significant associated with diet habit, energy, and financial aspects domains of QOL. The SE was positively associated with the QOL ($r=0.31$; p-value ≤ 0.01). The SE is relationship with QOL of T2DM. Therefore, health care provider should need to maintain the domains of QOL through improving SE, while considering the characteristics of T2DM patients, including age, period of illness, and years of education.

Keywords: Characteristics of patients, self-efficacy, type 2 diabetes mellitus, quality of life domains.

Introduction

Diabetes mellitus is a global concern since its chronicity impairing and devastating for the life of the people living with the disease. It is no longer affected developed country but also developing country. Report of International Diabetes Federation (IDF) in 2017 revealed that there are 425 million of people with diabetes and predicted to reach up to 48 % in 2045 in the world. Moreover, South East Asia was the top prevalence since there are 82 million of people with diabetes compared to other region around the world (International Diabetes Federation, 2017). Indonesia as a low middle income county contributed to 7.6 million of people with diabetes mellitus (DM) and made to be the fourth largest country related to number of undiagnosed diabetes for aged 20–79 years old in 2017 (International Diabetes Federation, 2017). The rising prevalence of the disease showed that many people with diabetes who will experience the long term treatment, which could affect their quality of life. Moreover.

Quality of life among patients with diabetes mellitus is an important issue since chronic disease could impair some domains of patient's life. Quality of life is a concept that relates to the well-being of patients in terms of physical, psychological, social and environmental (World Health Organization, 2019). The length of time suffering from diabetes mellitus and the treatment that is undertaken can affect the functional, psychological, and health capacity and quality of life of patients (Wahyuni, Nursiswanti, & Anna, 2017). Most of patients with Type 2 Diabetes Mellitus reported poor quality of life (Yamin & Sari, 2018). Quality of life of patients with diabetes mellitus is one of the main focuses in treatment. Quality of life is very important to get serious attention since it closely related to morbidity, such as patients with emotional distress are more likely to decrease their QoL (Gomez-Pimienta et al., 2019). In addition, the ability to manage diabetes will affect the QoL (Afzan et al., 2018).

Self-management in diabetes is necessary for the patient to engage in the long term-care, and one strong predictor of diabetes management is self-efficacy (Kim, Song, & Kim, 2019). Moreover, good management of diabetes lead to better health outcome. It was consistent with previous study found that self-efficacy was one of several factors affecting the quality of life among patients with diabetes mellitus (Rahman & Sukmarini, 2017).

Self-efficacy is an individual's belief in the ability to self-regulate and carry out the tasks needed to achieve the expected results. Self-efficacy determines individuals to feel, think, motivate themselves and behave to achieve the desired goals (Bandura, n.d.). Self-efficacy in patients with diabetes mellitus focuses on their beliefs about their ability to perform diabetes self-care behaviors (Al-Khawaldeh, Al-Hassan, & Froelicher, 2012). Self-efficacy encourages self-control processes to maintain the behaviors needed to manage self-care in patients (Gedengurah, 2011). Self-efficacy in type 2 diabetes mellitus patients focuses on patient confidence to be able to perform behaviors that can support the improvement of their disease and improve self-care management such as diet, physical exercise, medication, glucose control and treatment of diabetes mellitus in general (Gedengurah, 2011).

Most of study on self-efficacy and the quality of life among patients with type 2 DM obtained from various standard instruments, which constructed from western culture. The existence of differences in measuring instruments and the limited studies in Indonesia using instruments that have been found to be most effective and in accordance with culture of Indonesia. Therefore, this study want to identify the association between characteristics of patients, self-efficacy and domains of quality of life among patients with type 2 diabetes mellitus in Indonesia.

Method

This study was a correlation analysis with a cross-sectional approach. This study was conducted at Sukasari primary health center (puskesmas) in Tangerang City from April to June 2018. Participants in this study were 105 patients with type 2 diabetes mellitus. The Participants were selected by consecutive sampling technique. The inclusion criteria

participants in this study were type 2 diabetics who have had diabetes for at least one year, can communicate verbally, able to provide informed consent. Meanwhile, patient with dementia or Alzheimer's disease were excluded in this study.

The characteristics of patients comprises of gender, marital status, level of education and period of illness were measured by self-reported questionnaire developed by the researcher. Moreover, the instrument used to measure the quality of life in this study is the Asian Diabetes Quality of Life (Asian DQoL). The Asian DQoL instrument is a tool developed by Goh in 2014 and has been tested on the Malaysian and Singaporean population which is considered a representation of ethnic Malays, Chinese and English living in Asia (Goh, Rusli, & Khalid, 2015). It consists of 21 items, including financial, diet, memory and cognition, energy and relationship component. This 5 Likert scale measured quality of life which higher score indicates higher quality of life. The researchers have been allowed to use the Asian DQoL instrument in this study. This instrument has been tested for validity and reliability with a Cronbach alpha value of 0.91.

The instrument used to measure self-efficacy in this study was the Diabetes Mellitus Self Efficacy Scale of the United Kingdom (DMSES UK). DMSES UK is an instrument developed by Sturt in 2009. This questionnaire consists of 15 items with 0 to 10-point scale, which higher score indicating high self-efficacy. The DMSES UK can be used to measure self-efficacy for self-care for type 2 diabetes both in clinical areas and in the study area (Sturt, Hearnshaw, & Wakelin, 2010). This instrument has been tested for validity and reliability with a Cronbach alpha value of 0.95.

Prior to data collection, this study had been granted ethical approval from Health Research Ethics Committee with letter number 445/089-KEP-RSUTNG. The data collection was done by interviewing prospective participants to identify participants for this study. The researcher explained the procedure and asked for willingness of the recruited participants to fill out informed consent.

The data in this study were not normally distributed. Therefore, the association between characteristics of patients, including age, years of education, period of illness, self-efficacy and all domains of quality of life were measured by Spearman Rank-Order Correlation analysis ($p < .05$).

Results

Characteristics of patients

Out of 105 patients with type 2 diabetes mellitus, 70.5 % were female, the marital statuses were married (80 %), and levels of education were senior secondary school (42 %). Out of the total respondents, period of illness ranged from 1 year until 20 years (M = 6.18 years, SD = 4.67 years) and 71.5 % were age of 56-65 years old.

Association between characteristics of patients, self-efficacy and quality of life.

Results of the Spearman correlation indicated that there were no significantly association between characteristics of patients and quality of life (Table 1). However, there was significant association between

Table 1 Association between Characteristics of Patients, Self-Efficacy and Quality of Life among Patients with Type 2 Diabetes Mellitus (N = 105)

Variables	Age	Years of Education	Period of Illness	Self-Efficacy
Quality of Life	-0.04	0.06	-0.12	0.31**
• Diet habit	0.10	0.15	-0.16	0.47**
• Energy	-0.06	0.02	-0.09	0.40**
• Memory and cognition	-0.21	-0.12	-0.35**	0.08
• Financial Aspects	0.08	0.04	-0.11	0.32**
• Interpersonal relationship	0.00	0.23*	-0.01	0.13

*Note: *p < .05; **p < .001*

characteristics of patients and quality of life domains. A positive correlation was found between years of education and interpersonal relationship domain (r= .23; p= .032); a negative correlation between period of illness and memory & cognition domain (r= -.35, p =.000) ; a positive correlation between age and memory and cognition (r= .21; p= . 032). It is showed that self-efficacy was positively correlated with quality of life. Moreover, self-efficacy was associated with diet habit, energy, and financial aspects domains.

Discussion

The results of this study found that there were relationships between characteristics of patients, self-efficacy and QoL among patients with type 2 diabetes mellitus. It was consistent with results from previous studies (Amelia, Ariga, Rusdiana, Sari, & Savira, 2018; Wang, Chen, Yang, & Juan, 2017), which will be explained further as follows.

The result of this study showed that characteristics of patients with DM had association with some domains of QoL. Concerning the association between age and memory and cognition indicated that T2DM patients who are older more like to perceive lower score on memory and cognition. As people become older, their memory and cognition function could deteriorate (Bahk & Choi, 2018). It was supported that 75 % of the age of respondents are ranged 56–65 years old. Moreover, the complexity of the diabetes management could be related to how these patients perceive their satisfaction in terms of ability to recall or recognize events or things.

Concerning the relationship between period of illness and memory & cognition, it showed that patients with DM who had longer period of illness more likely to show a decline of recalling ability. A study of Hazari et al. indicated that patients with disease duration over 5 years were more prominent to experienced cognitive deterioration (Hazari, Ram Reddy, Uzma, & Santhosh Kumar, 2015). However, there were no significant relationship between the duration of illness and cognitive function in previous study. The inconsistency might because of the cognitive function in the present study was measured by decision making and memory recall power, while the previous study measured the cognitive function by P300 that use a speed of neural events linked to short memory.

Regarding the self-efficacy, the results showed that self-efficacy was associated with some domains of QoL, including dietary habit, energy, memory and cognition, and financial aspects. Perceived self-efficacy is the beliefs about own competencies to accomplish any task, which influence to the life through four psychological processes, such as cognitive, motivation, affective and selection process (Bandura, n.d.). Self-efficacy perceived by the patients could be an important factor that make people achieve difficult task as a challenge and immerse in their activities. For instance, patients with diabetes who perceived high self-efficacy will be more motivated to engage to the diet for DM since the patients feel confidence to be able to complete the dietary requirement.

The change as the impact of the diabetes perceived by the patients as a challenge need to be managed appropriately. Furthermore, the patients will be more likely to fulfil their regimen eagerly. According to Bandura, self-efficacy affects people to reduce stress since any threatening conditions recognized as an experience that they can control over them (Bandura, n.d.). The finding of this study was in line with a previous study stated that perceived self-efficacy associated with quality of life domains (Amelia et al., 2018; Bowen et al., 2015; Kurnia & Kusumaningrum, 2017; Walker, Smalls, Hernandez-Tejada, Campbell, & Egede, 2014). People who perceived higher self-efficacy tend to be able apply diabetes management, including diet, regiment, and exercise requirement. Consequently, the patients who have high self-efficacy will eventually have a good management of the disease, leading to perceive higher satisfaction in their aspects of life.

Conclusion

The findings revealed that the characteristics of patients and self-efficacy were significantly associated with quality of life domains. The

study suggests that the higher score of quality of life domains will be achieved by enhancing self-efficacy perceived by the patients with diabetes. Thus, this study can be a baseline data to develop self-efficacy intervention for improving the QoL by considering group of patients related to their age, years of education and period of illness.

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Determinant Factors of Fertility in Reproductive Age Women

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Abstract

The target of the 2015 Medium-Term National Development Plan is the fertility rate of 2.1 children. However, based on The Indonesian National Demographic and Health Survey 2017, the fertility rate of West Java Province is similar to the national, which is 2.4 children. West Java is a barometer of the national fertility rate since one-fifth of Indonesia's population is in West Java. This study aims to analyze the factors that influence fertility (number of children ever born). The design of this study was cross-sectional. Data derived from the 2018 Survey of Accountability Programs Performance covered 12,350 women aged 15-49 years. The sample was 9,814 woman who had been married. Data analysis used univariate, bivariate and multivariate analyses with a confidence level of 0.05. Bivariate results found that five variables that affected fertility were the age of first marriage, frequency of marriage, use of contraceptive, ideal family size, and wealth index, while the area of residence was not related to fertility. Indeed there are three most dominant factors that have been related to fertility were the age of first marriage, frequency of marriage, and the use of contraceptives. The conclusion was that women who marry at an older age and use contraception have lower fertility rates. This study can be considered in population control policies, especially to improve health promotion programs regarding the ideal marriage age for women and the use of contraception as an effort to control the population rate. This study can be considered in population policies.

Keywords: Age of first marriage, children ever born, fertility, reproductive-age women, use of contraception.

Introduction

The population is the core capital of development and the indicator for sustainable development (Wicaksono & Mahendra, 2016). However, its uncontrollable rise can obstruct the effort to improve and ensure the people's prosperity (Sinaga, Hardiani, & Prihanto, 2017). One of the factors that influence the number of people and growth rate is fertility (Arsyad & Nurhayati, 2017; Bongaarts, 2015).

Today, some developing countries such as Indonesia are mitigating fertility to keep balance of the number and the quality of its population. Although it has implemented the Family Planning program since 1968, the total fertility rate (TFR) remains quite high. The government's target is to curb the TFR to 2.1 in 2020 (BKKBN, 2018). However, the survey result shows that it only decreased from 2.6 children in 2012 to 2.4 in 2017 (Indonesian Health and Demographic Survey [Survey Demografi dan Kesehatan Indonesia, SDKI], 2017). The national fertility data is generally absorbed from the data in West Java province as the province with the most significant population in Indonesia, one-fifth of which lives there. The SDKI-based fertility data in West Java showed a slight decrease from 2.5 in 2012 to 2.4 in 2017.

Challenges caused by the high TFR in developing countries will impact reproductive health problems such as mother and child death, premature babies, domestic problems like emotional contention, divorce, low chance of good education, and poor socio-economic status (Ministry of Women Empowerment and Child Protection & Central Statistics Agency, 2019). Therefore, factors affecting the decrease of TFR is an important moot for the Indonesian government.

Total fertility rate (TFR) is a concrete reproduction result of someone or a group of women, while in the definition of demography is measured by the number of children ever born (ALH) (Mulmi, 2018). Bongaarts (2015) suggested the model about factors affecting fertility as the revision of (Bongaarts, 1978; Davis & Blake, 1956; Freedman, 1961). This model explains fertility affected by intermediate variables including intercourse (age of first marriage and frequency of marriage), contraception (use of contraceptives), and gestation variable. On the other hand, the background determinants include demographics, socio-economic status (wealth index, education, and occupation), and socio-cultural context including ideal family size (Arsyad & Nurhayati, 2017; Awad & Yussof, 2017; Bongaarts, 2015; Febrina, Amalita, & Murni, 2014; Lestari, Musa, & Roy, 2018a; Marlina, Normelani, & Hastuti, 2017; Mulmi, 2018; Rahmayeni Zulwida, 2016)

Therefore, the factors affecting fertility in Indonesia is worth considering. Previous research regarding determinant factors of fertility include the age of first marriage, frequency of marriage, and the use of contraceptives, results differently. Women who got married at 21-25 age have a higher chance of having more than two children, compared to those who got married at a younger or older age. Besides, previous research shows that the older the marriage, the less the children ever born is likely to happen (Arsyad & Nurhayati, 2017; Lestari, Musa, & Roy, 2018; Sinaga et al., 2017; Upadhyay & Bhandari, 2017).

The frequency of marriage can affect the number of children ever born, but not many previous research discussing the former relating to the latter. Stone (2018) shows that since 2009, the fertility of women who got married in America is getting lesser, but those who are widowed and have been married for more than once have a higher fertility rate because those women want to have children from their partners. The more-than-one frequency of marriage may increase the risk of having many children.

Arsyad and Nurhayati (2017); Bongaarts (2015), the use of contraceptives has a direct impact on children ever born or fertility rate. It enables couples to reach the expected ideal family size and prevent unwanted births. It also has a positive impact on the fertility rate Arsyad and Nurhayati, (2017); Wicaksono nd Mahendra, (2016) so that it can help prevent birth or manage birth intervals. However, Mulmi, (2018) claims that there is no relationship between the use of contraceptives and the number of children ever born because most respondents did not use contraceptives. Research from also has a similar view, saying

that contraceptives are only used to measure birth intervals but not to limit it.

Based on the theory of Bongaarts (1978), Bongaarts (2015) and Davis and Blake (1956) Indirect factors affecting fertility include socio-economic factors reflected by wealth index, ideal family size as the socio-cultural factor, and the area of residence as a demographic factor. Based on Lestari et al. (2018) the higher the family's income, the higher the number of children ever born because parents feel financially capable of giving more births. The amount of primary needs borne by the parents with the number does not prevent them from increasing the number of births. Indonesia has the belief that having many children equals future economic privileges. The research goes against that of Arsyad and Nurhayati (2017), saying that the amount of wealth has a negative correlation to children ever born. It concludes that the number of children ever born may lower once the wealth quantile index rises.

The values held in a community or society can have an impact on the fertility rate (Freedman, 1961). The impact of norms on the fertility rate was first coined by Freedman (1961) with a revision argument on the model developed by Davis and Black 1956 and Bongaart 1978. On the latest proposed model from Bongaarts 2015 through the scheme on "Modelling the Fertility Impact of the Proximate Determinants: Time for a Tune-Up," saying that the values or norms will become environmental index that determines the fertility in a region. The research by Arsyad and Nurhayati, (2017) shows that there is a significant relationship between the number of children wanted and children ever born. This study is supported by (Khongji, 2013) that the ideal family size may influence fertility in a region. This condition is affected by the cost factor, including socioeconomic status, cultural values, and religious values growing in that region. Therefore, this factor becomes vital to observe within the context of Indonesians with deeply-rooted cultural and religious values.

The area of residence is divided into villages, cities, or abandoned and developed regions. These categories can influence fertility because an individual's area of residence will impact social behaviors (Gee, 1990; Sunaryanto, 2012). Sunaryanto (2012) states that women living in metropolitan cities tend to have a low fertility rate. It is because respondents are working women that want lesser children. This research is supported by Raharja (2014) and Arsyad and Nurhayati (2017), claiming that women living in the city have a lesser chance of giving birth compared to those in villages.

Factors affecting fertility are the age of first marriage, frequency of marriage, use of contraceptives, wealth index, ideal family size, and area of residence. Knowing the always dynamic demographic situation in Indonesia, it is necessary to update factors regarding fertility. Therefore, this research aims to identify the fertility determinant factors, both immediate and non-immediate. This study is expected to provide information on dominant factors affecting fertility rate and become a suggestion for the decision-makers in formulating a policy of population control through The Program of Population, Family Planning, and Family Building.

Method

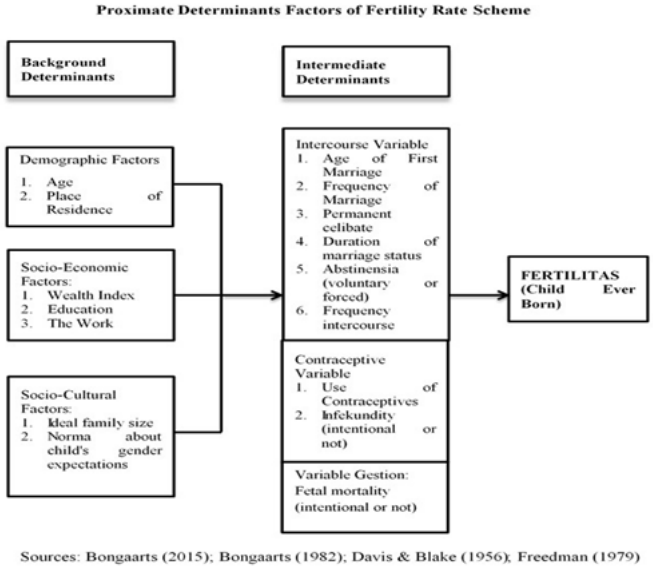
This research uses secondary data from Survey of Performance of Program Accountability (Survey Kinerja dan Akuntabilitas Program [SKAP]) 2018. SKAP is a national-scale survey that collects data about women's reproductive health program, family planning, and media exposure on information about citizenship, family planning, women's reproductive health, and family endurance and empowerment.

This research uses a cross-sectional approach, specified to the data in West Java Province. The population consists of reproductive-age women in West Java as much as 22.712.982 million people. The samples are 12.350 women aged 15 to 49 years old. The available samples are 9.814 reproductive and married women. The dependent variable in this research is measured by children ever born. Meanwhile, the independent variables include direct factors: the age of first marriage, frequency of marriage, use of contraceptives, and non-intermediate factors such as wealth index, ideal family size, and the area of residence.

This study is a secondary analysis of the SKAP 2018 survey. The procedure of this research was carried out with stratified multistage sampling, with the following stages: 1) The first stage of the sample framework was a list of villages throughout West Java, supplemented by urban/rural classification information. 2) The second stage of the sample framework was the list of clusters in the selected village; 3) The third stage of the sample framework was the listing of households or the results of listing households in selected clusters conducted door-to-door by enumerators. Then, the enumerator will choose 35 households by systematic random sampling based on the results of the household listing conducted by door to door. Determination of 35 households based on the sufficiency of the number of cases to be able to provide information per cluster containing about 200-250 households. The enumerator then retrieves data using a household questionnaire, which contains a questionnaire about reproductive-age women's health, the history of children ever born and the factors that influence it. This research was conducted by upholding the ethical principles of research. This study has been approved by the Ethics Review Board, based on a Certificate of Ethics Review from the National Population and Family Planning Agency, Number 1281/PD.101/H4/2018 on April 30, 2018.

The analysis of data used univariate, bivariate, and multivariate analysis. The univariate analysis described the distribution of frequency of all variables, including independent and dependent. Bivariate is an analysis of the relationship between each independent and dependent variables. Multivariate is to determine the most dominant variable that contributes to the number of children ever born using logistic regression. The steps in the modeling of compound logistic regression are as follows: Doing a bivariate analysis to determine which variable to be the model candidate. Each independent variable is correlated to dependent variables (chi-square test used as a bivariate test). Then a selection of variables will be included in the multivariate modeling if the p-value<0.25. In this research, all independent variables go into the modeling (the age of first marriage, frequency of marriage, use of contraceptives, wealth index, ideal family size, and the area of residence).

The next step is multivariate analysis using logistic regression. In this step, where variables have p-value >0.05 is indicated and issued one by one from the model. This step is done chronologically starting from variables with the biggest p-value, which is the ideal family size (p=0.999), then the wealth index (p=0.128). Therefore, we will



Picture 1 Proximate Determinants Factors of Fertility Rate Scheme

get the latest multivariate modeling. Below will be explained the scheme of the design in this research.

Results

Table 1 Frequency Distribution of Children Ever Born, Age of First Marriage, Frequency of Marriage, Use of Contraceptives, Wealth Index, Ideal Family Size, and Area of Residence on Respondents (n=9814)

Variable	Frequency	Percentage (%)
Children Ever Born:		
0-2	6826	69.6
>2	2988	30.4
Age of First Marriage:		
<15 years	784	8
15 – 20 years	4771	48.6
20 – 30 years	4053	41.3
>30 years	206	2.1
Frequency of Marriage:		
Only Once	8552	87.1
More Than Once	1262	12.9
Use of Contraceptives:		
Using	8685	88.5
Not Using	1129	11.5
Wealth Index:		
Lower Wealth index	3399	34.6
Middle Wealth index	4158	42.4
Upper Wealth index	2258	23.0
Ideal family size:		
1	11	2
1–2	5786	59.0
3–4	3700	37.7
>4	317	3.2
Area of Residence:		
City	6581	67.1
Village	3233	32.9

Table 2 Analysis of Relationship between Age of First Marriage, Frequency of Marriage, Use of Contraceptives, Wealth Index, Ideal Family Size, and Area of Residence with Children Ever Born on Respondents (n=9814)

Variable		Children Ever Born Category				Total		p-value	Odds Ratio
		0 – 2		>2					
		f	%	f	%	f	%		
Age of First Marriage:	<20 years	3464	62.4	2091	37.6	5555	100	0.000*	341.440

	20 – 30 years	3165	78.1	888	21.9	4053	100		
	>30 years	197	95.6	0	4.4	206	100		
	Total	6826	69.6	2988	30.4	9814	100		
Frequency of Marriage:	Only Once	6124	71.6	2428	28.4	8552	100	0.000*	131.907
	More Than Once	702	55.6	560	44.4	1262	100		
	Total	6826	69.6	2988	30.4	9814	100		
Use of Contraceptives	Yes	5844	67.3	2841	32.7	8685	100	0.000*	183.322
	No	982	87.1	146	12.9	1128	100		
	Total	6826	69.6	2987	30.4	9813	100		
Wealth index:	Lower Wealth index	2170	63.8	1229	36.2	3399	100	0.000*	80.026
	Middle Wealth index	3019	72.6	1138	27.4	4157	100		
	Upper Wealth index	1636	72.5	621	27.5	2257	100		
	Total	6825	69.6	2988	30.4	9813	100		
Ideal family size:	0	5	100	0	0	5	100	0.000*	506.553
	1–2	4526	78.2	1260	21.8	5786	100		
	3–4	2139	57.8	1561	42.2	3700	100		
	>4	156	49.2	161	50.8	317	100		
	Total	6826	69.6	2982	30.4	9808	100		
Area of Residence	City	4536	68.9	2045	31.1	6581	100	0.056	3.631
	Village	2290	70.8	943	29.2	3233	100		
	Total	6826	69.6	2988	30.4	9814	100		

Table 3 Modeling of the End of Analysis on Determinant Factor Most Impactful to the Number of children ever born to Respondents

Variables	B	SE	Wald	OR (95%CI)	p-Value
Age of First Marriage	2.355	0.337	48.929	10,543 (5,449-20,397)	0,000*
Frequency of Marriage	0.551	0.064	74.484	1,735 (1,531-1,966)	0,000*
Use of Contraceptives	-1.120	0.093	143.954	0,326 (0,272-0,392)	0,000*
Area of Residence	-0.330	0.049	44.944	0,719 (0,653-0,792)	0,000*
Constants	1.852	3.64	25.921	0.157	0,000*

Table 1 is the result of distribution analysis of the frequency of children ever born, age of first marriage, frequency of marriage, use of contraceptives, and area of residence on respondents (n=9814). The result shows that most respondents (69.6%) have 0 to 2 children ever born. Nearly half (48.6%) of the respondent's age of first marriage is 15 to 20 years old, but 8% of respondents got married above 15 years old. In terms of the norm of ideal family size or the expected number of children, almost 60% of the respondents want to have 1 to 2 children, while 40% others want more than three children. In the wealth index category, nearly half of the respondents (42.4%) are in the middle category, but 34.6% are in the lower wealth index category. According to the area of residence, most respondents (67.1%) live in the city. Almost all respondents (87.1%) have been married once. Regarding the use of contraceptives, almost all respondents (88.5%) have used contraceptives.

Table 2 explains the relationship analysis between the age of first marriage (UKP), frequency of marriage, use of contraceptives, wealth index, ideal family size, and the area of residence with children ever born on respondents (n=9,814). The result of relationship analysis between all independent variables with the number of children ever born, showing that five (5) variables with valuable relationships. Those variables are: 1) the age of first marriage (p=0.000); 2) frequency of marriage (p=0.000); 3) history of use of contraceptives (p=0.000); 4) wealth index (p=0.000); and 5) ideal family size (p=0.000). Meanwhile, the area of residence does not have any valuable relationship with the number of children ever born (p=0.056), but it still included in the multivariate analysis because the p-value was <0.25.

The respondents whose first marriage age is younger (<20 years) tend to have higher children ever borns (>2 people). It is also seen in this study, that respondents having 0 to 2 children ever born are those only married once. The more the frequency of marriages increases, the more chance a woman has more children. Respondents using contraceptives mostly have <2 children ever borns. Respondents having 0 to 2 children ever born tend to have higher of respondents having a wealth index on the medium and high category. Conversely, respondents having children ever born >2, most respondents have a lower wealth index.

Respondents having 0 to 2 children ever borns are mostly found on those wanting two children or less. Conversely, those having >2 children ever borns are respondents wanting to have more than two children. In terms of the area of residence, the research result shows there is no significant difference between the area of residence and the number of children ever born, but the respondents having more than two children ever born mostly live in the city.

From the overall analysis process, it can be concluded that out of six variables thought to be related to children ever born, there are four variables that are significantly related: the age of first marriage, frequency of marriage, use of contraceptive, and the area of residence. The respondents with marriage age of 15 to 30 years have a chance of 10.53 times higher to have children ever born>2 compared to those with marriage age of >30 years old after controlled by other variables. In this study, the village residence is a protective factor for having more than two children. Respondents who lived in cities are 0.719 times more likely than respondents who live in villages to have more than two children. The equity (1) is an equity model of logistic regression, as explained below:

Children Ever Born = -1,852 -2,355* Age of First Marriage – 0,330* Area of Residence +0,551* Frequency of Marriage - 1,120* Use of Contraceptives

The equation model (1) can be estimated that the number of children ever born using three intermediate variables (first marriage age, frequency of marriage and use of contraceptives) and one non-intermediate variable, that is the area of residence. If the coefficient B value is positive, the coefficient B value is negative. For example, in the variable of use of contraceptives -1.120, meaning there is a decrease of childbirth 1.120 if the respondents use contraceptives, controlled by the age of first marriage, frequency of marriage, and area of residence.

Age of first marriage and frequency of marriage have a significant relationship on the increase of children ever born. Respondents with the age of first marriage below 20 years old has a risk of 2.55 times to have children ever born >2. The respondents with the frequency of marriage +0.551 will increase the chance of children ever born as much as 0.551 after being controlled with the variable of the age of first marriage, use of contraceptives, and the area of residence. Living in villages becomes the protective factor to have children ever born >2 as much as 0.33 times, meaning that respondents living in the city have a risk of 0.33 times higher to have children >2.

On the Beta column, we can identify which variable is the biggest in determining the dependent variables (children ever born). The bigger the Beta value, the more significant the impact on dependent variables. In this research, it can be concluded that the younger the first marriage age, the marriage frequency >1, does not use contraceptives and live in the city can lower the risk of having children ever born >2.

Discussion

Viewed from the result of the multivariate test, the age of first marriage is the most dominant factor that determines the fertility rate. The age of first marriage may sustain the chance of reproduction (Arsyad & Nurhayati, 2017; Mulmi, 2018; Upadhyay & Bhandari, 2017). The explanation about the relationship between the age of first marriage and the fertility rate is inverse, meaning that the higher the age of first marriage, the lesser the fertility rate (Larasati et al., 2018; Pratiwi & Herdayati, 2014). A society where most are women does their first marriage at a young age. The birth rate is higher than those whose first marriage is done at an older age in their life (Ekawati, 2008). Research in India states that teenage marriage will increase the chance of a higher fertility rate as much as 2,355 times. This research reveals that married respondents less than 20 years old are the greatest contributor for the family with children ever born >2. Therefore, it is necessary to educate about the ideal marriage age for women or would-be brides.

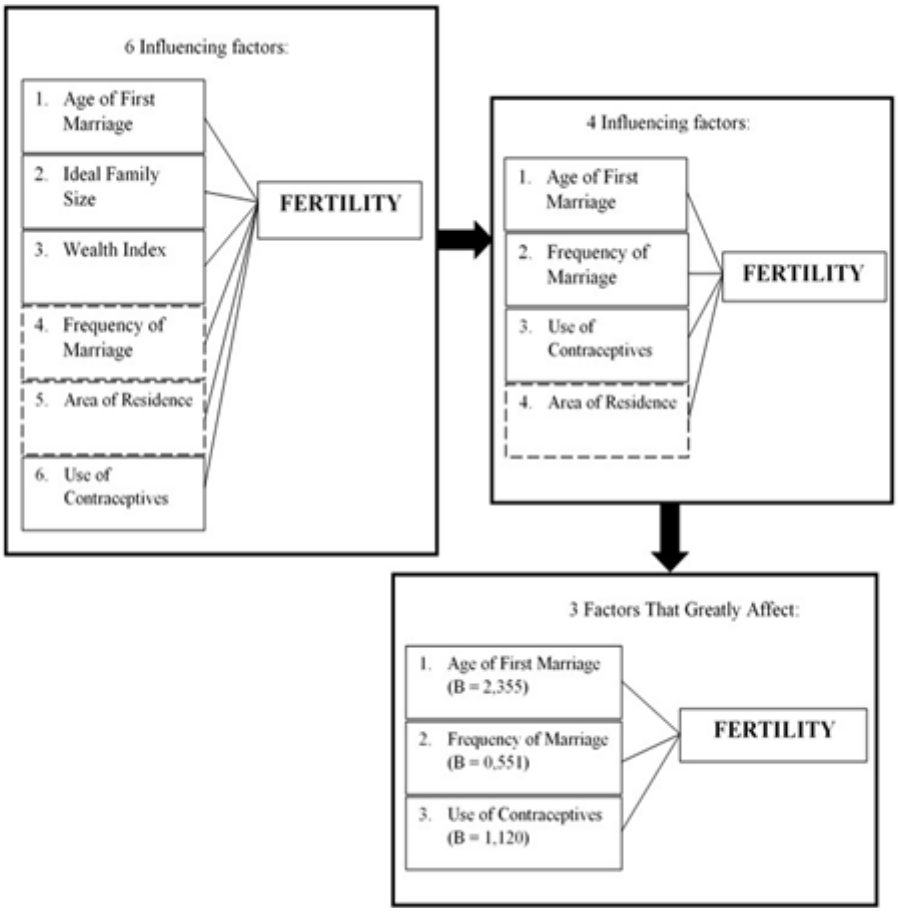
Another dominant factor affecting children ever born in this research is the frequency of marriage. It affects the fertility rate because most of the respondents are at a young age. Therefore, the time of reproduction increases and is the potential to marry again if divorced. It causes the increase of children ever born. This research also shows a positive relationship between the frequency of marriage and the number of children ever born, meaning that the more frequent a woman marries, the higher the chance of having more children ever born.

The last modeling in table 3 shows that the use of contraceptives is very much related to the number of children ever born with B value -1,120 (p=0.000). A negative beta value means that contraceptive use is a protective factor. It means that the use of contraceptives will reduce the chances of a woman to have more than two children. The results of this study are in line with Arsyad & Nurhayati, (2017; Bongaarts, (1978), Bongaarts, (2015); Davis and Blake, (1956); Wicaksono and Mahendra, (2016) which states that the use of contraceptives are the main protective factor to control fertility rate in a region. Therefore, the program of population control through The Family Planning Program is still relevant to the problem context of Indonesians today. Although some research reports that the family planning program is out of date, as stated by Lestari et al., (2018) that report in Samarinda villages, the use of contraceptives do not affect fertility rate. Mulmi, (2018) also report that the same thing happens in India. However, there are some weaknesses in Lestari, Musa, and Roy, (2018) study, including the limited number of samples that

only cover one village in the Kalimantan region, while in this study the sample is large, covering villages and cities throughout West Java, so it is quite comprehensive representing households in West Java Province.

This study indicates that the socio-economic status reflected in the wealth index has a significant relationship to fertility rate. The respondents with fewer children ever born (0-2) are middle class and above, while those with low wealth index has more children ever born (>2). This research aligns with that of Upadhyay and Bhandari (2017) in India, stating that family with the lowest income in India has the highest fertility rate, compared to those with lower economic status. It might correlate with other factors, including families with low economy or education status (Upadhyay & Bhandari, 2017).

The results of this study indicate that respondents with middle to upper economic levels have fewer children due to several possible factors. One factor is the shift in perspective of the upper-middle class in having children (Sunaryanto, 2012). The children are not only seen in terms of universal usability but also economic burden due to some costs in life aligned with the number of children ever born (Sunaryanto, 2012). Furthermore, Sunaryanto explains that the costs to spend while having children include: education, health, operational needs, and nutrition improvement. Therefore, families with a high wealth index with a higher education level will have to think about whether they should add more children ever born. However, in this research, the wealth index is not a dominant factor in determining the fertility rate in West Java. The following image is the summary of dominant factors affecting the fertility rate in West Java (Image 2).



Picture 2 The Stages of Multivariate Analysis

Conclusion

Based on the analysis result, it can be concluded that the dominant determinant factor of fertility is the first marriage age, frequency of marriage, and the use of contraceptives. This research can be a means of consideration to make decisions about population control, specifically in West Java Province and the education about the ideal marriage age for women or to-be brides as well as the education on the use of contraceptives in the family planning program.

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