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Original Research

Socio-demographic Determinants and The Family Ability to Care for Children with Avoidant Restrictive Food Intake Disorder (ARFID)**Yoyok Beksi Prasetyo¹, Nursalam Nursalam², Rahmat Hargono¹ and Ahsan Ahsan³**¹ Faculty of Public Health, Universitas Airlangga, East Java, Indonesia² Faculty of Nursing, Universitas Airlangga, East Java, Indonesia³ Faculty Medicine, Universitas Brawijaya Malang, East Java, Indonesia**ABSTRACT**

Introduction: The ability of families to care for avoidant restrictive food intake disorder children is still low. There are only a few studies that examined the relationship between family factors and ability to care for children with avoidant restrictive food intake disorder. The purpose of this study was to identify the influence of socio-demographic factors on the ability of families to care for children with avoidant restrictive food intake disorder.

Methods: This study design was cross-sectional, with 245 participants. The sampling technique used was multistage sampling. Data were collected by using questionnaire. We then conducted an analysis of the univariate data using frequency distribution, while for the bivariate data, we used the chi-square technique. All of the data was processed using IBM SPSS 23.0 statistics.

Results: The results showed that the ability of care from the families (health promotion behavior) of children with avoidant restrictive food intake disorder was influenced by the socio-demographic factors, namely maternal age ($p=0.010$), the number of children ($p=0.047$) and education ($p=0.036$).

Conclusion: Young mothers need appropriate guidance and direction through good health education. Good health education in young mothers can reduce the pressure faced by the mothers when caring for their children with avoidant restrictive food intake disorder. Health promotion behavior is influenced by maternal education and maternal age. Through good mother's education, the mother will be able to provide a good pattern of care to children who experience avoidant restrictive food intake disorder.

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INTRODUCTION

The ability of families to care for children with Avoidant Restrictive Food Intake Disorder (ARFID) is still low. The low family capacity means that there is a disruption of care from the family to care for children with ARFID. This is indicated by neglect and abuse in the family (Mairs and Nicholls, 2016). Neglect or maltreatment in children is indicated by the tension between parents and children between 13 - 82% (Skovgaard Væver, Smith-Nielsen, and Lange, 2016). Skills in relation to providing a positive feeding style are a major problem (Blaine, Kachurak, Davison, Klabunde, & Fisher, 2017; Kerzner et al., 2016; van der Horst & Sleddens,

2017). Some of the problems related to this are forcing the food to run out at the age of infancy (67.9%) and at the toddler stage (77.4%), forcing food before the child feels hungry at the age of infancy (26.3%) and at the toddler stage (53.9%), giving sweet foods (ice cream, cakes, sweets) as much as at infancy (12.5%) and at the toddler stage (52%) and providing fast food as much as 8.9% at the age of infancy and 47.6% at the toddler stage (Baby et al., 2015). Forcing children to try new foods was 56.1% in infancy and 79.1% at the toddler stage (Baby et al., 2015).

Avoidant Restrictive Food Intake Disorder is a new term for describing infant and toddler feeding disorders with the following characteristics: refusing

to eat, poor mealtime schedules, low eating skills that are not in accordance with the child's development stage (Davies et al., 2006), a lack of interest in eating, avoidance based on sensory food including the appearance of food, the smell and taste of the food, fear that occurs when eating such as dysphagia and a fear of swallowing food (Davies et al., 2006; Fisher et al., 2014; Kostro, Lerman, & Attia, 2014; Nicely, Lane-Loney, Masciulli, Hollenbeak, & Ornstein, 2014). The distinctive difference from other eating disorders is that in ARFID, there are also psychological disorders such as anxiety and a lack of good parenting (Strandjord et al., 2016; Zimmerman & Fisher, 2017).

Children with ARFID were reported to be at 11% (Nakai et al., 2017), 12, 4% (Fisher et al., 2014), 22.5% (Nicely et al., 2014) and 5% - 23% (Mairs & Nicholls, 2016; Strandjord et al., 2016). Problems related to difficulty eating in children is largely determined by family factors, especially those of the mother or caregiver (Allen et al., 2015), where there is a dysfunctional mother and lacking in mother and child interaction (Goulding et al., 2014; Gueron-Sela, Atzaba-Poria, Meiri, & Yerushalmi, 2011; Kröller & Warschburger, 2009; Sacrato, Pellicciari, & Franzoni, 2010; Squires, Lalanne, Murday, Simoglou, & Vaivre-Douret, 2014), concerning the environmental and socio-cultural influences and any psychological tensions (Campbell & Peebles, 2014; De Luca & Napoletani, 2015; Strandjord, Sieke, Richmond, & Rome, 2015). Parenting problems such as neglect and abuse are important factors for families with ARFID children (Mairs & Nicholls, 2016). The prevalence of affection tension between parents was between 13 - 82% depending on the risk factors in the family such as neglected or maltreatment (Skovgaard Væver, Smith-Nielsen, & Lange, 2016).

The problem of ARFID will have a serious impact on children's growth and development so that it can cause stunting and wasting. A serious problem is a disruption in the life cycle in the future (Ágh et al., 2015; Campbell & Peebles, 2014; Segovia, 2015; Uher & Rutter, 2012), such as stunting and wasting. Indonesia has a fluctuating trend and has increased against stunting in the period 2007 - 2010. This is indicated by stunting data in Indonesia: 36.8% in 2007, 35.6% in 2010 and 37.2% in 2013 (Badan Penelitian dan Pengembangan Kesehatan, 2013; Kementerian Koordinator Bidang Kesejahteraan Rakyat, 2013).

Nutritional problems in children are influenced by the socio-demographic factors of the families, especially the mothers (Allen et al., 2015). The social demographic factors that cause the children to experience difficulty eating are dysfunctional mother and child interactions (Allen et al., 2015; Goulding et al., 2014; Gueron-Sela et al., 2011; Kröller & Warschburger, 2009; Sacrato et al., 2010), environmental and socio-cultural influences and psychological tensions (Campbell & Peebles, 2014; De Luca & Napoletani, 2015). The education level of

the mother determines the nutritional status of the child (Habibi, Zahra, Aguenau, & Doukkali, 2018). The good education of the mother will have an impact on the pattern of giving good food to the child (Do, Eriksson, Tran, Petzold, & Ascher, 2015). Paying attention to social and demographic characteristics is an important factor for improving the child's nutritional status (Holbrook, White, Heyman, & Wojcicki, 2013).

There is still very little research related to ARFID in Indonesia. This study had the main objective of analyzing determinant factors of socio-demography in relation to the ability of families to care for children with ARFID. The secondary objective was to compare the socio-demographic characteristics of the mothers and the nutritional status of the children, namely between mothers who worked and mothers who did not work and the ability of their families to care for children with ARFID. The purpose of this study was to identify the influence of socio-demographic factors on the ability of families to care for children with ARFID.

MATERIALS AND METHODS

The research location was in Malang Regency. Malang Regency has 69 integrated health posts divided into six Regional Coordinators (Korwil); Singosari, Tumpang, Turen, Pujon, Pagak, and Bantur. The Singosari Regional Office was determined to be a population area because of the presence of nutritional problems for infants, easy access, ease of transportation and relatively cheaper costs. The Singosari Regional Office included Pakis, Karangploso, Singosari Health Center, Ardumuljo, and Lawang Community Health Center (there were five community health centers).

The study design was cross-sectional. The sample size is determined using the rule of thumb in Structural Equation Modeling (SEM), which is the number of parameters estimated multiplied by 5 or 10 (Azman, 2017). There are 10 parameters so that the sample size is $10 \times 10 = 100$ participants (minimal). In this study, a sample of 245 participants was used. This research was conducted from December 2018 - March 2019. The sampling technique was multistage sampling, namely gradual sampling (Taherdoost, 2018). Phase one determines the puskesmas then in stage two chooses the posyandu ($n = 229$). In this study, 20% of posyandu ($n = 46$) were determined by simple random sampling. In the third stage, families with ARFID children were determined with a sample of 245 families with ARFID children. Participant inclusion criteria included children experiencing ARFID (<5 years), children who were not ill with chronic diseases, not experiencing congenital defects on the eating path.

The data collection was assisted by eight research assistants. The data collection was carried out through a survey using a questionnaire, both in community health centers and in the homes of

residents. The demographic characteristics questionnaire was developed by the researchers. The socio-demographic characteristics focused on the number of children, the age of the child, the mother's age, the mother's level of education and family income. The nutritional status of the children was determined by the anthropometry measurement, which refers to the WHO standard in 2005. The ability of families to care for children with ARFID have indicators of ability related to managing eating disorders and the ability to take health promotion actions (good category score = $X > \text{mean} + \text{SD}$; enough = $\text{mean} - \text{SD} \leq X \leq \text{mean} + \text{SD}$; less = $X < \text{mean} - \text{SD}$).

Independent variables are maternal and child demographic factors while the dependent variable is the family's ability to care for ARFID. Family ability consists of two sub-variables, namely the ability to manage eating disorders and the ability to show promotive behavior. The eating disorder management questionnaire consists of 9 items of statements with indicators: 1) cooperation with the health team, 2) cooperation with family members, 3) stepping positive relationships, 4) monitoring vital sign, 5) monitoring fluid output intakes, 6) setting appropriate expectations, 7) use behavior modification, 8) discuss with the health team, 9) take responsibility. Using a 5 point Likert scale (1: never, 2: rarely, 3: sometimes, 4: often, 5: always). The questionnaire has been tested for validity and reliability. Validity test results show valid with a value of > 0.4 and the reliability value of managing eating disorder (Cronbach's alpha = 0.888). The promotive behavior questionnaire consisted of 11 items of questions, with indicators: 1) asking appropriate questions, 2) completing assignments, 3) showing early examinations, 4) contacting health personnel, 5) showing ability, 6) explaining behavior change strategies, 7) obey strategy, 8) show healthy behavior, 9) seek health information, 10) explain strategies for maximizing health, 11) explain individual development strategies. Using a 5 point Likert scale (1: never, 2: rarely, 3: sometimes, 4: often, 5: always). Test the validity of all question items > 0.4 and reliability values (Cronbach's alpha = 0.830). The analysis of the univariate data used frequency distribution, while for bivariate data, we used the chi-square technique. All of the data was processed using IBM SPSS 23.0 statistics.

This research was carried out with the approval of the Declaration of Helsinki. Ethical approval as granted by the research ethics committee of the Faculty of Public Health, Airlangga University number 333- KEPK. All participants filled an informed consent form with their signature. The

privacy and confidentiality of the data were highly guaranteed.

RESULTS

Table 1 shows that the average maternal age between working and non-working (W / NW) groups was 30 years old. The average age of children with ARFID between the two groups - W / NW = 2.25 / 2.05 years (toddler age). The average number of W / NW children was the same (2/2). The sex of the children was mostly female both in group W / NW (60% / 53.7%). The income per month between 2 groups also did not have a significant difference with the majority of the income falling between 1 - 2 million / month. Demographic factors for maternal age, age of children, number of children, the gender of the child, income per month, no significant differences were found between groups of working mothers and non-working ($p \text{ value} > 0.05$). The mother's education in the working group was higher than in the group of mothers who did not work. This can be seen from the highest education category, namely college (W / NW = 23.6% / 9.5%; $p = 0.019$).

The anthropometric characteristics include height (H) and body weight (W) with the Categories of W / U. H / U. W / H are presented in Table 2. The mean W of children between the two groups was W / NW = 11.9 / 11.2 kg. The average H of the children between the two groups was N / NW = 86.9 / 84.4 cm. The nutritional status of the children based on W / U in both groups was lacking and they had a very poor nutritional status (W = 7.3% and 1.8%; NW = 18.4% and 3.2%). The nutritional status based on H / U also contained stunting conditions in both groups. This stunting condition can be seen from the presence of short and very short categories (W = 10.9% and 16.4%; NW = 16.8% and 21.6%). Nutritional status based on W / H involved a wasting condition in both groups. This wasting condition can be seen from the thin and very thin categories (W = 5.5% and 3.6%; NW = 10.5% and 2.6%). Table 3a shows that the family's ability to treat (manage eating disorder) children with ARFID is influenced by sociodemographic factors: maternal age ($p = 0.006$) and a number of children ($p = 0.001$).

Table 3a shows most of the family's ability to manage eating disorders in the category was quite good in the group of mothers who were under 30 years old (71.9%) or in the group of women who were over 30 years old (68.4%). The largest percentage of the family's ability to manage eating disorders, including the poor categories, was based on socio-demographics such as maternal age (≥ 31 years: 22.2%), the number of children (3-4 children: 34.9%), income (< 1 million: 23.2%), education (basic: 22%). and work (working: 20%).

Table 1. Socio-demographic characteristics between the Working Mother (W) and Non-Working (NW) Groups

Characteristics	W n (%) or M (SD) n = 55	NW n (%) or M (SD) n = 190	Total n (%) or M (SD) n = 245	p value*
Mother's age	30 (6)	30 (6)	30 (6)	0.905
Child's age	2.28 (1.24)	2.05 (1.07)	2.10 (1.11)	0.183
Number of children	2 (1)	2 (1)	2 (1)	0.400
Gender ^a				
Man	22 (40)	88 (46.3)	110 (44.9)	0.407
Women	33 (60)	102 (53.7)	135 (55.1)	
Income month ^b				
Above 2 million	18 (32.7)	45 (23.7)	63 (25.7)	0.397
1 - 2 Million	26 (47.3)	100 (52.6)	126 (51.4)	
Under 1 million	11 (20)	45 (23.7)	56 (22.9)	
Education ^c				
College	13 (23.6)	18 (9.5)	31 (12.7)	0.019
High school	13 (23.6)	76 (40)	89 (36.3)	
Junior high school	17 (30.9)	58 (30.5)	75 (30.6)	
Elementary school	12 (21.8)	38 (20)	50 (20.4)	

Note W (Works). NW (Not Working). M (mean). SD (standard deviation)

^a Gender of child

^b Family income in 1 month

^c Mother's education level

* Level of significance is 0.05

Table 2. Characteristics of the Anthropometry of Children between Working and Non-Working Mothers

Characteristics	W n(%) or M(SD) n = 55	NW n(%) or M(SD) n = 190	Total n(%) or M(SD) n = 245	p value*
Weight (kg) ^a	11.9 (2.8)	11.2 (2.7)	11.4 (2.7)	0.119
Height (cm) ^a	86.9 (10.3)	84.4 (10)	85 (10.1)	0.109
Weight/U ^b				
Overweight	0 (0)	2 (1.1)	2 (0.8)	0.161
Normal	50 (90.9)	147 (77.4)	197 (80.4)	
Underweight	4 (7.3)	35 (18.4)	39 (15.9)	
Very underweight	1 (1.8)	6 (3.2)	7 (2.9)	
Height/U ^b				
Tall	2 (3.6)	6 (3.2)	8 (3.3)	0.500
Normal	38 (69.1)	111 (58.4)	149 (60.8)	
Short	6 (10.9)	32 (16.8)	38 (15.5)	
Very short	9 (16.4)	41 (21.6)	50 (20.4)	
Weight/H ^b				
Overweight	3 (5.5)	24 (12.6)	27 (11)	0.260
Normal	47 (85.5)	141 (74.2)	188 (76.7)	
underweight	3 (5.5)	20 (10.5)	23 (9.4)	
Very underweight	2 (3.6)	5 (2.6)	7 (2.9)	

Note: N (Works). NW (Not Working). M (mean). SD (standard deviation)

^a W and H data obtained from a notebook in the integrated health post

^b The determination of the category was done through the Z-score value

* level of significance is 0.05

Table 3b shows that the caring ability of the families (health promotion behavior) of children with ARFID is influenced by socio-demographic factors, namely maternal age ($p = 0.010$), the number of children ($p = 0.047$) and education ($p = 0.036$). Most of the family's ability to behave in health promotion was quite good in the group of women who were under 30 years of age (74.2%) or in the group of women who were over 30 years old (68.4%). Health promotion behavior in the good category is based on socio-demography with a higher percentage in maternal age ≤ 30 years:

17.2%), the number of children (1-2 children: 15.9%), the equal income between those who earn > 2 million and the groups that earn 1-2 million (14.3%), those with an education (middle-high: 14.9%) and work (not working: 14.2%).

DISCUSSION

The average age of the mothers was in the productive age with the ability to manage eating disorders and health promotion behavior; this differed between the groups of mothers under or equal to 30 years old. Mothers who are of a younger

Table 3a. Socio-demographics and The Family's Ability to Manage Their Child's Eating Disorder

Characteristic	Ability to Manage an Eating Disorder			p-value
	Less n (%)	Enough n (%)	Well n (%)	
Mother age				
≤ 30 years	12 (9.4)	92 (71.9)	24 (18.8)	0.006
≥ 31 years	26 (22.2)	80 (68.4)	11 (9.4)	
Number of children				
1 – 2 child	23 (11.4)	145 (72.1)	33 (16.4)	0.001
3 – 4 child	15 (34.9)	26 (60.5)	2 (4.7)	
Income				
< 1 millions	13 (23.2)	36 (64.3)	7 (12.5)	0.255
1 – 2 millions	19 (15.1)	91 (72.2)	16 (12.7)	
> 2 millions	6 (9.5)	45 (71.4)	12 (19)	
Education				
Elementary school	11 (22)	34 (68)	5 (10)	0.278
Middle - College	27 (13.8)	138 (70.8)	30 (15.4)	
Job				
Working	11(20)	37 (67.3)	7(12.7)	0.569
No Working	27 (14.2)	135 (71.1)	28 (14.7)	

Table 3b. Socio-demographics and the Family Caring Ability (Health Promotion Behavior)

Characteristic	Ability to Show Promotive Behavior			p-value
	Less n (%)	Enough n (%)	Well n (%)	
Mother age				
≤ 30 years	11(8.6)	95 (74.2)	22 (17.2)	0.010
≥ 31 years	25 (21.4)	80 (68.4)	12 (10.3)	
Number of children				
1 – 2 child	25 (12.4)	144 (71.6)	32 (15.9)	0.047
3 – 4 child	10 (23.3)	31 (72.1)	2 (4.7)	
Income				
< 1 millions	15 (26.8)	34 (60.7)	7 (12.5)	0.055
1 – 2 millions	16 (12.7)	92 (73)	18 (14.3)	
> 2 millions	5 (7.9)	49 (77.8)	9 (14.3)	
Education				
Elementary school	13 (26)	32 (64)	5 (10)	0.036
Middle - High	23 (11.8)	143 (73.3)	29 (14.9)	
Job				
Working	7 (12.7)	41 (74.5)	7 (12.7)	0.839
No Working	29 (15.3)	134 (70.5)	27 (14.2)	

age have the ability to treat eating disorders better than the mothers over the age of 31 years old. Relatively younger mothers will learn to recognize themselves and learn to be responsible for their children if they experience ARFID. Responsible learning is shown through affection, responsiveness, and responsibility when it comes to caring for their child (Dlamini, 2016). This sense of responsiveness is indicated by the acceptance of the signs/signals that the child shows. They need to interpret signals well and provide the appropriate response as indicated by voice, facial expressions and touch (Esposito, Manian, Truzzi, & Bornstein, 2017; Lavallée, Aita, Bourbonnais, & De Clifford-Faugère, 2017). Sensitive responses from the parents include accuracy, consistency and the appropriate response from the parents concerning the signs of affection that come from the child (Troutman, 2015). Responsiveness is a dimension related to parental responsiveness in terms of guiding a child's personality regarding assertiveness, self-regulation

and the fulfillment of special needs (Kasy, 2017). In addition to the above factors, relatively younger mothers who live within large families such as where grandparents are present will get full support from their families (financial, emotional and care support) (Easterbrooks, Chaudhuri, Bartlett, & Copeman, 2011). Family support is very much needed in childcare to provide protection and direction (Cismaru & Le Pioufle, 2016).

Children experience ARFID on average in the toddler age group. ARFID symptoms at the age of infancy and in the toddler stage include refusing to eat, a bad meal schedule and low eating skills (Davies et al., 2006). Children aged 6 months - 3 years will experience infantile anorexia which is characterized by rejecting a number of foods, the inability to control hunger and fullness, environmental disturbances and experiencing growth and development disorders. This is because toddler-age children experience a transition to the habit of being fed themselves. New dynamics also

occur between the children and their caregivers. The child learns to put food in their own mouth. The children learn to feel the sensation of hunger and fullness while the caregivers always try to keep on forcing the food. The impact is that their children will feel depressed while eating (Merwin, Advisor, & Gray, 2010)

The education level of the mothers in the working mother's group was higher. Mothers who have a higher education level will have the chance to get a better job position. Better work will help the family financially when it comes to providing facilities that support children's growth and development (Putri & Gutama, 2018). The challenge for mothers when it comes to working on their parenting is to provide warmth, attention, and care for their children. The mothers are able to provide attachment to their children on the sidelines of their busy life so then the closeness is still intertwined with the interconnection of positive feelings that will have a positive impact on the child's development (Dewi, 2016). Good communication can create a harmonious family atmosphere, such as being open to each other and having trust. This warm interaction will have an impact on children's health. Mothers who have good interactions with their children, mothers will be able to provide good care shown by being able to manage their children's health and be able to carry out health promotion actions (Panico, 2012).

Working mothers will also get additional information. The knowledge and networking are better than those of the mothers who don't work. This will increase the confidence of their individual beliefs when dealing with children's problems related to ARFID. Confidence is the basis that determines someone as being able to take preventive action against diseases and health promotion activities (Akey, Rintamaki, & Kane, 2013). This explains why someone changes or maintains specific health behaviors (Akey et al., 2013; James, Pobee, Oxidine, Brown, & Joshi, 2012; Poortaghi et al., 2015) and it also explains why someone can fail to participate in activities aimed at detecting or preventing disease (Borowski & Tambling, 2015). This helps to predict if someone will take actions in relation to prevention, screening and controlling illness conditions (Glanz, Rimer, & Viswanath, 2008).

Children with ARFID experience stunting and wasting (Campbell & Peebles, 2014). Stunting and wasting problems occur due to the failure to meet their appropriate nutritional needs and/or energy requirements (Katzman, Stevens, & Norris, 2014). Next, it will cause one or more signs of significant weight loss, caused by a lack of nutrition. Children are very dependent on nutrition, oral supplements and the presence of psychosocial functions (Berlin, Davies, Silverman, & Rudolph, 2011; Sharp, Volkert, Scahill, McCracken, & McElhanon, 2017). This causes physical health problems and has an impact on social, emotional and cognitive development (Goudet

et al., 2018). If it continues until adolescence, then there will be a disruption of identity and self-esteem (Mairs & Nicholls, 2016). Impaired identity and self-esteem are associated with a body shape that is too thin, giving rise to shame and insecurity (King, Urbach, & Stewart, 2015).

Having a smaller number of children, between 1-2 children, correlates associated with the better ability to manage eating disorders and the ability to conduct better health promotion behaviors. This is when compared with families that have 3 to 4 children. Mothers with fewer children will be able to maintain warmer mother-child interactions. This is due to the availability of sufficient time to interact. This warm interaction will affect children's health. Mothers who have good interactions with their children will be able to provide good care as shown by being able to manage the health of their children and being able to take health promotion actions (Panico, 2012). The ability of mothers to take health promotion actions is determined by the mother's education. Maternal education is linear to the ability of the mothers of health promotion behavior. The mother's education is one of the factors that determine the success of the parenting patterns present when feeding their children (Do et al., 2015; Goulding et al., 2014). In contrast, low maternal education results in poor health promotion behavior (Mulyani, 2016).

CONCLUSION

The ability to care for children with avoidant restrictive food intake disorder children is impacted on by the maternal socio-demographic factors. Eating disorders are regulated by maternal age. Young mothers can get the right guidance and direction through good health education when caring for children with avoidant restrictive food intake disorder children. Health promotion behavior is influenced by maternal education and maternal age. Through good mother's education, the mother will be able to provide a good pattern of care to children who have avoidant restrictive food intake, disorder children. The quality of the mother's interaction and will be a very important part. Increasing mother and child interaction is one of the keys to the implementation of nursing to provide nursing care to children who experience ARFID.

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Original Research

Knowledge, Family Support and Self-Reliance Capital when Caring for Low Birth Weight Babies**Erlina Suci Astuti¹, Nursalam Nursalam², Shrimarti Rukmini Devy¹ and Risa Etika³**¹ Faculty of Public Health, Universitas Airlangga, East Java, Indonesia² Faculty of Nursing, Universitas Airlangga, East Java, Indonesia³ Department of Neonatology, Dr. Soetomo General Hospital Surabaya, East Java, Indonesia**ABSTRACT**

Introduction: Low birth weight (LBW) infants are very susceptible to illness. LBW treatment with the principle of preventing infection is very important at home. The purpose of this study was to determine the relationship between maternal knowledge and family support with the prevention of infection at home.

Methods: This study used a correlation design. The samples were 160 mothers who had low birth weight infants with inclusion criteria mothers give birth to babies weighing less than 2,500 grams with ages 0-2 months. The samples were obtained through purposive sampling. The dependent variable was the mother's ability to prevent infection while the independent variable was the mother's knowledge and family support. The instruments used were questionnaires. This research analyzed using Spearman Rho.

Results: The results showed that there was a strong correlation between knowledge and the ability to prevent infection in treating low birth weight ($r = 0.696$; $p = 0.00$) and that there was a moderate correlation between family support and infection prevention ability when treating a low birth weight ($r = 0.54$. $p = 0.000$).

Conclusion: Factors of maternal knowledge about infection prevention and family support need to be considered in increasing the ability of mothers to care for babies with LBW. The factor of maternal knowledge about prevention of infection has a strong correlation value when compared to family support factors. Further research is needed on the model of increasing maternal knowledge about LBW infants during home care.

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INTRODUCTION

Low birth weight (LBW) babies are babies born with a body weight of less than 2,500 grams. The number of low birth weight infants in Indonesia is also quite high. Riskesdas in 2013 showed that the percentage of low birth weight of infants was 10.2%. The birth rate of low birth weight infants in East Java was 11.2%, which is slightly higher than the national figure (RI Ministry of Health, 2014; WHO, 2014). The high prevalence of low birth weight babies in Java, especially East Java because in addition to the large population resulting in a high number of births, the culture of women in Java as workers to help the family economy where most respondents have less family

income, fatigue due to work, psychological conditions, maternal age at pregnancy and maternal nutritional factors during pregnancy.

The physiological condition of low birth weight has an impact on various health problems that arise such as hypothermia, the lack of ability to consume nutrients and infection (RI Ministry of Health, 2010; World Health Organization, 2011; Akter, Dawson and Sibbritt, 2016).

Infection and sepsis are health problems related to a low birth weight during the neonatal period that can lead to death. The incidence rate of infection in the neonatal period can reach 17% (respiratory infections) and the incidence rate of sepsis can reach 22%. Low birth weight babies are the second leading

cause of neonatal death in Indonesia, which is 32% (RI Ministry of Health, 2014).

The survey results in hospitals in Malang, East Java, found that 10.4% of the total LBW infants treated in the Perinatology room were LBW infants who experienced re-hospitalization, meaning that after returning from the neonatology room before they were one-month-old, the baby had to be hospitalized again because of serious health problems. Health problems that often occur in LBW infants are being febrile, infection, dehydration, shortness of breath, vomiting, and diarrhea.

The health condition of a low birthweight after returning from home care must be maintained properly. Mothers, as the primary care providers for LBW, must be able and independent both in knowledge, attitude and actions when it comes to caring for their babies, especially in terms of the prevention of infection.

The ability and independence of the mother in treating LBWs is determined by their knowledge, mental readiness and skills when carrying out baby care. The results of the research showed that the mother's knowledge about the care of the baby at home found that the mother's knowledge in relation to the effort to prevent infection was 44.45% with less knowledge (Rita et al., 2008). Infection is the main cause of death in LBW infants. Infection in LBWs at home can be due to the inability of the mothers to care for babies cleanly, as well as environmental factors such as exposure to infection in both the human and living environment. The risk of infection in LBWs is also due to the body's immunity factor which is still lacking. The body is not able to defend itself against any infections that enter the body.

Mothers who have LBW babies often experience obstacles in relation to carrying out their roles. One of the obstacles is family support. Family support is very important when the mothers experience role changes, stress and further care problems when at home (Singer et al., 2017; Jilian Ireland et al., 2016; Mehler et al., 2014).

Mothers need knowledge, information and care support from the environment from both health and family officers in the first 6 months after birth (Warren, 2005). Family support is very important in order to improve the ability and confidence of the mothers in caring for babies. However, family support in relation to the care of LBW babies is sometimes less than optimal. Dewi Purwanti et al (2012), in her study, said that family support for independence and the role of mothers when caring for LBW babies was less supportive (53%).

A lack of maternal knowledge about LBW, an unstable psychological condition and LBW conditions that require special care and family support will all have an impact on the ability of the mothers when it comes to caring for LBW. LBW treatments that are not particularly good at preventing infection will cause the babies to get sick.

The purpose of this study was to provide information on maternal knowledge about the

prevention of LBW infection and its relationship with family support and the ability of the mothers to prevent infection.

MATERIALS AND METHODS

This study used a correlation research design that explains the relationship between knowledge and family support with the ability of the mothers to prevent infection when treating an infant with LBW. This research was conducted between September to November 2018 in Malang, East Java. This study involved 160 respondents obtained by purposive sampling from 190 respondents. The inclusion criteria were mothers who gave birth to LBW babies (body weight less than 2,500 grams with a baby aged 0-2 months and infants without any congenital defects). The dependent variable was the mother's ability to provide infection care while the independent variable was the mother's knowledge and family support.

The data was obtained through a questionnaire. The demographic data was assessed using one item that covered age, education, employment, childbirth history related to a previous low birth weight infant, family income and information on low birthweight care. The data was measured using a closed questionnaire. The mother's knowledge of preventative care for their infant was measured using a modified questionnaire on low birth weight care (Ministry of Health, 2014). Ten questions were used to assess family knowledge related to the definition, causes, signs and symptoms, ways and effects of the prevention of infection when treating LBW babies. The scale of the data in this questionnaire was ordinal with 1 (less) to 3 (good). The family support variable instrument was compiled based on a measurement questionnaire by Gareth D. Mercer (2015) with modifications adjusted to fit families who had infants with low birthweight.

This instrument consisted of statements about information support, assessment, instrumentality or means, emotional support and social network support with an ordinal data scale from 1 (less) to 3 (good). The instrument of the ability of the mothers to take preventive measures was measured through observations and interviews based on LBW care books and health manuals (Ministry of Health of the Republic of Indonesia, 2016; Ministry of Health, 2010) with 6 items focused on maternal activities. The collected data was categorized into ordinal data scales from 1 (less) to 3 (good).

All instruments were tested for validity and reliability in a pilot study consisting of 15 respondents. Each item in the statements had validity ($r > 0.529$) and each questionnaire also achieved reliability (> 0.8).

Descriptive analysis was used for the characteristics of the respondents. The analysis of the relationship of the dependent variables independently was done using Spearman Rho with a statistical significance level set at $p < 0.05$. Ethical

clearance was provided by the Faculty of Public Health ethics team number 504- KEPK on September 3rd, 2018.

RESULTS

Characteristics of the Respondents

The characteristics of the respondents have been presented in Table 1. The majority of respondents were aged between 20 and 35 years old. The most common education obtained was that of junior high school. The job of housewife was the most common. The monthly family income was most commonly less

Table 1. Characteristics of the Respondents

Variable	n	%
Age		
<20 years old	14	8.8
20-35 years	115	71.9
> 35 years old	31	19.4
Education		
Elementary school	40	25.0
Junior high school	57	41.9
senior high school	38	23.8
College	15	9.4
Work		
Farmer	10	6.3
Laborers	42	26.3
Employers	24	15.0
Housewife	84	52.5
Family Income		
<1 million	63	39.4
1-2 million	76	47.5
3-5 million	20	12.5
> 5 million	1	0.6
History of low birthweight		
Yes	101	63.1
No	59	36.9
Information about low birthweight care		
Yes	92	57.5
No	68	42.5

Table 2. Description of the Variables

Variable	n	%	Mean	SD
Independent Knowledge			2.75	0.49
Well	126	78.8		
Enough	29	18.1		
Less	5	3.1		
Family support			2.73	0.49
Well	92	57.5		
Enough	58	36.3		
Less	10	6.3		
Dependent Ability to prevent infection			2.73	0.49
Well	122	76.3		
Enough	34	21.3		
Less	4	2.5		

Table 3. Spearman Rho Analysis

Variable	Correlation Coefficient	Sig. (2-tailed)
Knowledge -ability	0.696	0.000
Family support -ability	0.540	0.000

than Rp. 2.000.000. Most of the respondents had had children with a previous low birthweight.

Description of the Variables

The description of the variables has been explained in Table 2. The average maternal knowledge about the prevention of infection in neonates was 2.75 (SD = 0.49). The average family support felt by the respondents was 2.51 (SD = 0.61). The ability of the mother to prevent infection when treating LBWs at home averaged 2.73 (SD = 0.49).

Variable Correlation

The calculated correlation between infection prevention and the ability to treat an infant with a low birth weight as well as the correlation between family support and infection prevention care for infants with a low birth weight. The test results show that there was a relationship between family support and infection prevention in LBWs ($r = 0.54$; $p = 0.000$). There is a relationship between a low birth weight and the prevention of care and between family support and infection prevention for low birth weight infants (Table 3). The test results show that there was a relationship between family support and infection prevention ability ($r = 0.54$; $p = 0.000$).

DISCUSSION

Knowledge is the basic foundation of behavior. The knowledge of baby care for mothers is very important so then the mothers are able to care for their babies well. The research findings showed that in relation to the mothers' knowledge of infection prevention, 78.8% at a good level and the practice of infection prevention in caring for babies was also good at 76.3%. The results of good knowledge from 78.8% of the respondents showed that the awareness of and willingness to seek out information in the sample of mothers who had LBW infants was very high because 42.5% of respondents did not get the information needed.

The results of extracting information when the data was collected were obtained even though the mother had not received good information regarding LBW care from the health workers. When preparing to go home, not all hospitals did a good discharge planning method of low-weight baby care at home obtained from the results of the questionnaire, only some mothers received the information from the sick hospital who cared for it, not all mothers during treatment waited for their singers first allowed to go home while their baby is still in the hospital so if there is counseling at home the baby does not know. Almost all mothers had mobile communication media access that enabled access to the internet in addition to asking neighbors or relatives who had given birth for help. This data is known when interviewing data retrieval mothers have cellphones with internet services.

The mothers consider that information about baby care is the main requirement for postpartum

mothers (Arzani et al., 2015; Slomian et al., 2017). There are four postpartum maternal needs, namely: information needs, psychological support needs, the need to share experiences and practical and material support needs. A mother needs more and sometimes different information from other mothers because they sometimes have a different focus on the problems that can arise (Misgna, Gebru and Birhanu, 2016; Slomian et al., 2017).

Less knowledge will make the mother feel confused and not know what to do to care for her baby. This condition will make the mothers stressed and even depressed. The stressful condition of the mother will disrupt their daily activities, including the task of caring for the baby (Offiah, O'Donoghue and Kenny, 2012). The results of the research that supports this was conducted in Canada. It found that the mothers of premature babies experience increased levels of psychological stress that is more severe in the neonatal period than mothers of full-term infants.

The confusion, stress and anxiety of mothers stands out when they are discharged from the hospital (Singer et al., 2017). This psychological pressure will be weighed on by the family environmental factors, such as a low family income and a large number of family members that are dependent on the same pool of living costs (Suplee, Gardner and Borucki, 2014). The results of this study indicate that 86.9% of the respondents came from families with an income of less than 2 million per month, which is an income level far from the regional minimum wage of Malang (2.7 million / month).

The mother's knowledge was, overall, relatively good, even though some of the mothers had not received information about LBW care at home supported by the experience factor of having a low birth weight baby before and their age. The results showed that 63.1% of respondents had a history of giving birth to LBW infants beforehand, so that they were familiar with the health conditions and care of LBW babies. The age of the respondents in this study was that 71.9% were of a productive age or they were women of childbearing age who had the duty to care for their children.

The health information in this study was partly provided by the health workers (57.5%). Correct information about LBW care both during childbirth and on their return to the hospital from a health worker in charge of the community will increase the level of maternal knowledge. Visits by community health workers have been shown to increase the interaction and communication of mothers and health workers so then they are able to solve any baby health problems well, especially in the first month (Horowitz et al., 2013).

Health education has been shown to increase the mother's confidence in caring for her baby (Gilmer et al., 2016). Babies with problems or high-risk babies are vulnerable groups who must get special care and assistance such as visits so then the mothers are not

too stressed and are able to independently care for their babies (Haugan, Innstrand and Moksnes, 2013).

This is done because LBW babies have serious problems regarding the risk of infection, their lack of nutrient intake and hypothermia. Infections that arise as a result of poor treatment, such as not washing one's hands properly when treating a baby, avoiding exposure to infection at home, using non-sterile devices for direct care, sterile cord care etc. can trigger infection and sepsis (Rice, 2001; Marilyn and Wong, 2004; Yadav, Chaudhary and Shrestha, 2011).

The results of the study show that the knowledge of mothers about the prevention of infection in LBWs has a significant effect ($p = 0,000$) on the ability of the mothers to prevent infection in relation to the care of their babies. Village midwives actively provide counseling and assistance. The results related to maternal knowledge were that 18.1% had sufficient knowledge and that 3.1% were incompetent, which means that the baby has the potential for infection and illness. This is in accordance with Boykova and Kenner's (2012) study which found that 30% of LBW babies will experience pain after being taken care of at home. The high birth rate of LBWs and premature babies puts a burden on the parents and also creates a public health burden because of the impact of morbidity and mortality (Offiah et al., 2012).

Family support is something that cannot be ignored in relation to helping the cognitive and behavioral abilities of the mother to care for her baby. The family support given to the mother to care for her baby is given the most by the biological mother or mother-in-law who lives close to the mother of the baby, support by the husband, especially in the nuclear family. Support for the mother is not given as whole care but it is very helpful for the mother to care for her baby. The biggest support is psychological support for funds to provide baby care facilities. A family atmosphere that is harmonic, that fulfills the material needs of the mother, that is involved in infant care and that provides support for other treatments will improve the mother's psychology. Mothers, in both the antenatal and postpartum period of ten, do not feel that they are informed enough about this difficult part of their life span; they need support from their family. They feel that they are not sufficiently supported, not only from a psychological point of view but also from a more practical perspective. For example, this can include help with domestic work. Mothers need to share their life experiences, they need to be convinced and they need to feel understood. Family support is done by providing for the needs of the mother and trying to prevent the risk of postpartum psychological distress during the postpartum period (Hookway and Everson, 2011; Ingram et al., 2016).

The results showed that family support for mothers who carried out LBW care at home was 57.5, which is good, with there being a number of significant relationships from maternal behavior to preventing infection in the medium category. In carrying out the role of a mother, a harmonious

relationship between husband and mother-baby and with other family members is the most important factor (Alligood, 2014).

Family support increases people's confidence. The family is a source of power that is owned by the family in order to regulate their values, communication patterns and the role of the family as a lifestyle. This is so then the families are able to carry out their functions well (Friedman, 2003).

The results showed that the treatment and behavior required to prevent infection in infants was 76.3%, and therefore was at a good level. Good care and the supervision of LBW babies is derived from knowledge and family support. This shows that the preparation for the transition from the hospital setting is quite good. Preparation for this period still requires commitment from the health workers, mothers and their families (Murch and Smith, 2016).

Monitoring the condition of the baby and mentoring the mother is very important in order to maintain a conducive situation for the health of LBW babies and their mothers (Schönbauerová and Boledovičová, 2015; Mahanta et al., 2016).

CONCLUSION

Factors of maternal knowledge about infection prevention and family support need to be considered in increasing the ability of mothers to care for babies with low birth weight. The factor of maternal knowledge about prevention of infection has a strong correlation value when compared to family support factors. Further research is needed on the model of increasing maternal knowledge that is optimal so that babies with low birth weight do not have health problems during home care.

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Original Research

The Association of Body Mass Index, Physical Activity and Hypertension in Indonesia

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ABSTRACT

Introduction: Hypertension can cause cardiovascular disease and it is still a serious global problem. The Prevalence of hypertension has increased every year. Some of the factors associated with hypertension are obesity and physical activity. The prevalence of obesity has increased every year and many people have lower levels of physical activity. This study aims to analyze the correlation between Body Mass Index (BMI), physical activity and hypertension in Indonesia.

Methods: This study used a cross-sectional study design using secondary data from the Indonesia Family Life Survey 5 (IFLS5) conducted in 2014 - 2015. The sample consisted of individuals in the households interviewed and 26,472 respondents fulfilled the criteria. The data was analyzed using multivariate logistic regression.

Results: The results showed that most of the respondents were of productive age. More than half of the respondents were female (52.05%). The respondents who had hypertension totalled 22.63%. After being controlled by the covariate variables, the results showed that the obese respondents had 4.08 times higher odds of experiencing hypertension compared to the normal respondents (AOR= 4.08, 95% CI = 3.68-4.53, p-value = 0.000) and that the respondents who were overweight were 2.49 times likely to get hypertension compared to the respondents who were normal (AOR = 2.49, 95% CI = 2.32-2.67, p-value = 0.000). Meanwhile, the respondents with an underweight BMI were 0.58 times more likely to have hypertension compared to the respondents who were normal (AOR = 0.58, 95% CI = 0.52-0.65, p-value = 0.000).

Conclusion: Individuals with a higher BMI will be more at risk of hypertension while physical activity is not related to hypertension. The government and health services need to increase the promotion of a healthy lifestyle, especially healthy diet programs, to encourage the population to maintain an ideal body weight and to reduce the rate of hypertension.

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INTRODUCTION

Hypertension is a silent killer disease that causes serious and dangerous diseases in the community (WHO, 2013). Hypertension, or high blood pressure, is an increase of the systolic blood pressure of more than 140 mmHg and of the diastolic blood pressure by more than 90 mmHg taken via two measurements with an interval of five minutes when in a state of adequate rest or calm. Hypertension in the long term can cause damage to the kidneys, heart and brain if it is not detected early and treated (Kemenkes RI, 2013).

Globally, cardiovascular disease causes 17 million deaths every year. This is almost one-third of the total deaths, where 9.4 million deaths are due to complications from hypertension. Hypertension contributed to 45% of deaths due to heart disease and 51% of deaths due to stroke (WHO, 2013). In Indonesia, hypertension is a major challenge that often occurs in primary health care. The treatment for hypertension is often not sufficient even though there are many effective medicines available (Kemenkes RI, 2013). Indonesia has experienced an increase in the prevalence of hypertension based on the measurement results for people aged ≥ 18 years in 2013 through to 2018, which went from 25.8% up

to 34.1% (Kemenkes RI, 2018). There are many risk factors for hypertension. Some are modifiable and the rest are unmodifiable. The unmodifiable risk factors are age, gender, family history and genetics. Meanwhile, the modifiable risk factors include smoking habits, saturated fat consumption, salt consumption, the use of used cooking oil, drinking habits, obesity, a lack of physical activity, stress and the use of estrogen (Kemenkes RI, 2013).

BMI is one of the risk factors of hypertension. BMI is related to determining nutritional status. Nutritional status can be used to identify weight. Weight problems at an early age can risk various degenerative diseases in adulthood (Kemenkes RI, 2013). In addition to this, BMI is used as an adiposity index in terms of clinical research. Central abdominal adiposity or obesity proves that there is a relation between obese and the risk of hypertension (Mancini, et al., 2011). According to the results of a study conducted by Kembuan, Kandou & Kaunang (2016) in Southeast Minahasa Regency, it showed that respondents who were obese (BMI > 30 kg / m²) had a risk that was 3.4 times greater of developing hypertension than the respondents who were not obese. Similar to hypertension, abdominal obesity is also associated with an increased risk of cardiovascular disease. Diseases related to mechanical stress in the body are also associated with obesity due to the increase in weight (Visscher and Seidel in Crawford and Jeffery, 2006).

Another risk factor for hypertension is a lack of physical activity. A lack of physical activity and the availability of high-calorie foods can prompt the development of pathological conditions such as obesity and cardiovascular disease. Physical activity would help to reduce excessive weight and to improve the efficiency of the cardiovascular system and overall psychological condition of well-being (D'Isanto, Tiziana, et.al, 2017). According to research conducted by Sihombing Marice (2017), a sufficient level of physical activity was significantly associated with hypertension. In addition, low-risk physical activity was 1.61 times to prompt the development hypertension than high physical activity. Other studies have shown that low physical activity increases the risk by 3.5 times of obese hypertension in early adolescents (Rabaity and Sulchan, 2012).

Based on the previous studies, Body Mass Index and physical activity were significantly correlated with hypertension. Moreover, obese adults have a lower level of physical activity than those with a normal weight, so both factors possibly influence the incidence of hypertension (Fernandes and Zanesco, 2010). Hypertension is now considered to be a major public health problem and its prevalence has increased in 2018 in Indonesia. Therefore, to overcome this problem, this study has sought to determine the factors related to hypertension, which are modifiable: Body Mass Index and physical activity.

MATERIALS AND METHODS

The method used in this study was a cross-sectional study design executed by analyzing the secondary data of the Indonesia Family Life Survey 5 (IFLS5) conducted in 2014 - 2015. IFLS5 had a response rate of 90.7%. The population of this study was individuals in households throughout Indonesia. The sample totaled about 26,472 respondents after excluding the missing data of 6,209 respondents.

The sampling technique used was multistage random sampling. IFLS is a survey conducted longitudinally. A sampling of IFLS1 was carried out by randomly selecting from the 13 provinces based on the sample in SUSENAS 1993. From there, 321 areas were chosen including both urban and rural areas. After that, from each area, 20 urban and 30 rural households were chosen randomly. Respondent in IFLS5 were individuals interviewed in IFLS1, IFLS2, IFLS3 and IFLS4 (Strauss, Witoelar, and Sikoki, 2016).

The dependent variable of this study was hypertension status as obtained from the guideline books. Hypertension status was based on the average blood pressure measurement of the respondent (us07a, us07b, us07c code) which was done three times. The respondents were claimed to have hypertension if their systolic blood pressure was ≥ 140 mmHg and diastolic blood pressure was ≥ 90 mmHg. Blood pressure was measured using Omron meter version HEM-7203. The independent variables of this study were BMI and physical activity, as well as the characteristics of the respondents consisting of age, sex, education, marital status and smoking status. The BMI variable was divided into four categories: underweight (<18.5 kg/m²), normal (18.5-25 kg/m²), overweight (25.01-29.99 kg/m²) and obese (≥ 30 kg/m²). The physical activity variable was divided into three categories: low activity (<600 MET (Metabolic Equivalents)), moderate activity (600-3000 MET) and high activity (≥ 3000 MET). The age of the respondents (age code) was categorized as productive age (15-64 years) and non-productive age (> 64 years). The sex variable (sex code) and marital status (marstat code) were selected as in the 3A book. The education variable (d06 code) was the length of the education period taken by the respondents categorized into three; low education (<8 years), moderate education (8-13 years) and high education (≥ 14 years). The smoking status variable was determined based on the smoking habits of the respondents (km04 code). The respondents were claimed to be a smoker if they had smoking habits and claimed as not being a smoker if they did not have smoking habits and if they had never consumed tobacco (km01a code).

The data was analyzed using univariate, bivariate and multivariate techniques. Univariate analysis was performed to determine the frequency and distribution of the variables. Bivariate analysis was done used Chi square. Multivariate analysis was

Table 1. Characteristics of the Respondents

Variable	Hypertension				Total (n)	Percentage (%)
	Yes		No			
	n=5,991 (22.63 %)		n=20,481 (77.37 %)			
	(n)	(%)	(n)	(%)		
Body Mass Index						
Underweight	381	11.64	2,892	88.36	3,273	100
Normal	2,757	18.44	12,192	81.56	14,949	100
Overweight	2,000	32.33	4,187	67.67	6,187	100
Obese	853	41.35	1,210	58.65	2,063	100
Physical Activity						
High	2,269	22.61	7,767	77.39	5,682	100
Moderate	2,490	23.15	8,264	76.85	10,754	100
Low	1,232	21.68	4,450	78.32	10,036	100
Age (year)						
15-64	5,172	20.57	19,975	79.43	25,147	100
≥65	819	61.81	506	38.19	1,325	100
Sex						
Male	2,877	22.66	9,817	77.34	12,694	100
Female	3,114	22.60	10,664	77.40	13,778	100
Education						
Low	3,279	33.23	6,588	66.77	9,867	100
Moderate	2,136	15.79	11,391	84.21	13,527	100
High	576	18.71	2,502	81.29	3,078	100
Marital Status						
Yes	4,574	23.80	14,646	76.20	19,220	100
No	1,417	19.54	5,835	80.46	7,252	100
Smoking Status						
Yes	1,865	21.95	6,630	78.05	8,495	100
No	4,126	22.95	13,851	77.05	17,977	100

performed using multiple logistic regression tests to investigate the most dominant factors affecting the incidence rate of hypertension. The covariate variables that had a relationship with hypertension with a p-value <0,25 were included in the multivariate analysis. The backward method was used to select the variables. The confounding variables were assessed by issuing the covariate variables one by one. This part of the study started with the variable that had the largest p-value. After that, if there was a difference in the odds ratio of more than 10% before and after the covariate variable, the variable must be excluded from the model.

RESULTS

This study found that 22.63% of the respondents experienced hypertension and that 23.37% of them were overweight and 7.79% were obese. Only 37.91% of the respondents had a high level of physical activity. Meanwhile, 94.99% of the respondents were of a productive age and most of them were female, making up 52.05% of the respondents. The respondents who had achieved higher education made up 11.63%, 72.61% of them were married and 32.09% of the respondents smoked (Table 1).

Based on Table 2, bivariate analysis showed that obese respondents had a 3.12 times higher risk of hypertension compared to normal respondents (OR=3.12, 95% CI = 2.83-3.43, p-value = 0.000). Meanwhile, the respondents who were overweight were 2.11 times likely to have hypertension

compared to the respondents who were of a normal weight (OR=2.11, 95% CI = 1.97-2.25, p-value = 0.000). For respondents with underweight BMI had 0.58 times higher for experiencing hypertension compared with normal BMI (OR=0.58, 95% CI = 0.52-0.65, p-value = 0.000). Besides, there was no significant correlation between physical activity and the incidence of hypertension (p-value> 0.05).

Multivariate analysis after being controlled by the covariate variables, it was found that obese respondents had a 4.08 times higher risk of hypertension compared to normal respondents (AOR= 4.08, 95% CI = 3.68-4.53, p-value = 0.000). Meanwhile, the respondents who were overweight were 2.49 times likely to have hypertension compared to the respondents who were of a normal weight (AOR = 2.49, 95% CI = 2.32-2.67, p-value = 0.000). For respondents with underweight BMI had 0.58 times higher for experiencing hypertension compared with normal BMI (AOR = 0.58, 95% CI = 0.52-0.65, p-value = 0.000). Moreover, there was no significant correlation between physical activity and the incidence of hypertension after being controlled by the covariate variables (p-value> 0.05).

DISCUSSION

In this study, the prevalence of hypertension was 22.63%. This number was lower than the Riskesdas data from 2018, where the prevalence was 34.1%. The IFLS5 survey was conducted in 2014 - 2015. The data illustrates that the prevalence of hypertension in Indonesia has continued to increase. This increase

Table 2. Crude Odds Ratio and the Adjusted Odds Ratio Showing the Correlation between the Independent Variables and Hypertension in Indonesia

Variable	Bivariate				Multivariate			
	OR ^(a)	95% CI		p value	AOR ^(b)	95% CI		p value
		lower	upper			lower	upper	
BMI								
Normal	Reff.				Reff.			
Underweight	0.58	0.52	0.65	0.000	0.48	0.43	0.55	0.000
Overweight	2.11	1.97	2.25	0.000	2.49	2.32	2.67	0.000
Obese	3.12	2.83	3.43	0.000	4.08	3.68	4.53	0.000
Physical Activity								
High	Reff.				Reff.			
Moderate	1.03	0.96	1.10	0.349	1.05	0.97	1.12	0.172
Low	0.94	0.87	1.02	0.180	1.02	0.94	1.12	0.529
Age (year)								
15-64	Reff.				Reff.			
≥65	6.25	5.57	7.01	0.000	6.15	5.43	6.96	0.000
Sex								
Female	Reff.				Reff.			
Male	1.00	0.95	1.06	0.903	1.48	1.36	1.61	0.000
Education								
High	Reff.				Reff.			
Moderate	0.81	0.74	0.90	0.000	0.97	0.87	1.08	0.600
Low	2.16	1.96	2.39	0.000	2.35	2.11	2.61	0.000
Marital Status								
No	Reff.				Reff.			
Yes	1.29	1.20	1.37	0.000	0.98	0.91	1.05	0.585
Smoking Status								
No	Reff.				Reff.			
Yes	0.94	0.88	1.00	0.070	0.87	0.80	0.95	0.002

Controlled by age, sex, education, marital status, and smoking status

a = Odds Ratio

b = Adjusted Odds Ratio

has been caused by changes in the lifestyle of Indonesian people such as smoking, eating foods that are high in fat, stress, obesity and a lack of exercise (RSUP Dr. Sardjito, 2018). The prevalence of hypertension in Indonesia was also lower than that of India, which was 31.4%. India is a developing country just like Indonesia (WHO, 2017). However, hypertension is still a health problem in Indonesia. This study also found that 23.37% of respondents were overweight and that 7.79% were obese. This result was lower than the results of the research conducted by Sari et. al (2018), in which 62.5% of respondents were overweight. Meanwhile in the Riskesdas data of 2018, 13.6% of respondents were overweight and 21.8% of respondents were obese.

The results of the multivariate analysis showed that the respondents who were obese were 4.08 more likely to experience hypertension than the respondents with a normal weight. This result was higher than the research conducted in Uzbekistan which consisted of the Uzbekistan Health Screening Survey. Obese men were only 3.01 times more at risk of developing hypertension compared to the normal respondents. On the other hand, obese women were 2.82 times more at risk of developing hypertension compared to the normal respondents (Mishra, Arnold, Semenov, Hong, Mukuria, 2006). Research by Mbolle, B.F.E, et. al (2014) showed obesity associated factor of prehypertension (pre-HT) and

hypertension (HT) (p value = 0,004). Research conducted by Forman, J.P., Stampfer, M.J., and Curhan, G.C. (2009) also showed that obese women were 4.70 times more at risk of developing hypertension compared to women with a BMI <23.0. This was supported by the research conducted by Sebayang (2017) which claimed that women were more likely to access health services than men. Another study conducted by Shuger, Sui, Church, Meriwether, and Blair (2008) showed that women who were overweight were 2.01 times more at risk of hypertension than women with a normal weight. As their BMI increased, so did their central obesity also increase (Kasyani, Sustiyowati, and Kandarina, B.J.I, 2017). Research by Amanda and Martini (2017) also showed that the respondents with central obesity were 2.56 times more likely to have hypertension compared to respondents without central obesity.

Obesity is associated with hypertension because insulin has the ability to induce sodium retention. Insulin resistance caused chronic sodium retention. Based on the research that has been done, obese adolescents had selective insulin resistance so they were resistant to stimulate glucose absorption and still sensitive to the renal sodium-retaining effect of insulin (Rocchini, 2002). Meanwhile, someone who is obese needs more blood to supply oxygen and nutrition to their bodily tissues, so the volume of

blood in the blood vessels increases. This means that the cardiac output increases and eventually, so too does the blood pressure (Sheps SG. In Sulastris, Elmatris, Ramadhani, 2012). Being overweight also increases insulin levels, which causes sodium retention in the kidneys. This also causes the blood pressure to increase (Morrison R. in Sulastris, Elmatris, Ramadhani, 2012). The effect of excessive weight on blood pressure is related to fat deposits in the body. The heart of overweight people works harder to pump blood because of the fat in the body clamping the blood vessels. In addition, for overweight people, the body also works hard to burn calories as the process requires an adequate oxygen supply. The more calories are burned, the greater the supply of oxygen needed. This causes the heart to work harder and for the person to experience an increase in blood pressure (Widharto in Mardani, Gustina, Dewanto, and Priwahyuni, 2011).

In this study, physical activity factors were not significant with the p-value = 0.172 for moderate activity and the p-value = 0.529 for low activity. This result was not in accordance with the research conducted by Chataut, Adhikari and Sinha (2011) in which the respondents with moderate physical activity showed significant results with the p-value = 0.00. In the study, the respondents with a moderate level of physical activity were 2.44 times at risk of developing hypertension than the respondents with a high level of physical activity. A study conducted by Hasanudin, Adiyani and Perwiraningtyas, (2018) also stated that there was a significant correlation between physical activity and blood pressure in the society of Kelurahan Tlogomas, Lowokwaru in Malang City with the p-value = 0.005. However, research conducted by Fernandes and Zanesco (2010) showed that current physical activity was not significantly related to the incidence rate of hypertension after adjusting for the confounding factors where the p-value = 0.815. The measurement of physical activity should be conducted for at least nine months to avoid bias (Fernandes and Zanesco, 2010).

In theory, individuals who were active in terms of physical activity had low levels of morbidity and mortality. This is because physical activity plays a role in reducing the pathological adverse effects including arterial hypertension, metabolic syndrome and type 2 diabetes mellitus (Fernandes and Zanesco, 2010). In addition, individuals with a low level of physical activity were at risk of developing hypertension due to a lack of energy expenditure (Sugianti in Sihombing Marice, 2017). Researchers in America explained that physical activity carried out for at least 15 minutes a day can reduce 14% of the risk of obesity hypertension (Rabaity and Sulchan, 2012). Meanwhile, the physical activity factor in this study was not correlated significantly with hypertension because the researcher did not measure physical activity for at least nine months and they did not conduct a control history of the hypertension variable. BMI is a powerful confounder

in the multivariate model. When it inserted into the analysis, current physical activity was not associated with hypertension (Fernandes and Zanesco, 2010).

The strength of this study was in the large sample. It represents 83% of the population in Indonesia. Thus, the bias can be minimized because it used the secondary data from IFLS5. In addition, the data was obtained through the measurement of the respondents' right and left arms repeated three times. This was to ensure that the data obtained was more valid. In this study, the researchers did not control for the history of hypertension variables which might influence changes in physical activity behavior before the measurements were made. For further research, it is suggested to examine the variables of hypertension history and other variables which are predicted to be related to hypertension, such as the respondent's diet.

Things that you can do to treat hypertension include modifying your lifestyle. Individuals who commit to a healthy lifestyle are less likely to experience hypertension (Forman, J.P., Stampfer, M.J., and Curhan, G.C., 2009). A healthy lifestyle includes having a healthy diet. A healthy diet is focused on maintaining weight by eating enough fruit, and salt and fat to a low degree. Government and public health services need to increase the promotion of a healthy lifestyle in society to reduce the rate of hypertension. These efforts can be carried out through improving the management of non-communicable disease control services comprehensively, especially promotive and preventive control services in particular.

CONCLUSION

Hypertension is a dangerous disease for the wider community. BMI factors are significantly associated with the incidence rate of hypertension. The higher the BMI, the greater the risk for hypertension. Meanwhile, the factor of physical activity is not significantly related to the incidence of hypertension. Government and health services need to increase the promotion of healthy lifestyles especially about healthy diet program to maintain an ideal body weight and to reduce the rate of hypertension.

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Original Research

Factors Correlated to Job Stress Among ICU Nurses

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ABSTRACT

Introduction: Job stress is a major barrier to the attainment of safety, health, and wellness among nurses. Understanding factors job stress among nurses is very important to provide alternatives solution to ease the stress in the future. However, there are limited studies with respect to factors related to stress in Intensive Care Unit (ICU) nurses particularly in Indonesian context. This study aimed to identify factors correlated to job stress among ICU nurse in three public hospitals.

Methods: A correlational study was carried on ICU nurses who hands-on ICU nursing care. Data were collected using questionnaires. Descriptive statistic and Spearman correlation were used to analyze the correlation between perceived job burden, working condition, quality of nursing work life, perceived organizational support, and stress among ICU nurses.

Results: A total of 91 respondents (32 male and 59 female) were involved to the study comprises of two different educational backgrounds (59 Diploma III and 32 Bachelor degree). The statistical analysis using Pearson correlation found that workload (0.003), working condition (0.000), quality of nursing work life (0.000), perceived organizational support (0.000) significantly correlated to job stress among ICU nurses.

Conclusion: All studied factors correlated to job stress among ICU nurses. All factors had moderate correlation with nurses' job stress and working condition has highest strong correlation compare to the other factors. Its implies from the result that management of the hospital may provide more attention to job stress among nurses to maintain optimum performance to provide nursing care for patients particularly critically ill patients in ICU.

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INTRODUCTION

The ICU nurses are confronted with the unpleasant facts every day and it is very difficult to avoid the source of stress. On the other hand nurses are required to always perform caring behaviour not only for patients but also for the patient's family. Previous studies revealed major stressor among ICU nurses include consistent contact with dying, interaction between patients' and family members, conflict with supervisors, uncertain condition and health progress of patients (Burtson and Stichler, 2010; Sarafis et al., 2016). Research in one hospital in East Java found that there was a relationship between job stress and caring behaviour where nurses did not provide caring behaviour optimally (74%) because they experienced

stress at moderate and severe levels (Desima, 2013). While other studies at the Intensive Care Unit showed that nurses indicate stressful behaviour (43.1%), experienced physical stress (43.7%), and experienced emotional stress (46.7%) (Amiyanti, 2000). A study found that Critical Care nurses experience greater level of stress compare to Internal Surgical Unit in Tehran (Zaher, Vafaei and Abianeh, 2016). Consistent contact with the events of death, interactions with patients and their families, conflicts with supervisors and uncertainty about therapy caused much higher stress in ICU nurses (Burtson and Stichler, 2010; Sarafis et al., 2016)

The characteristics of the ICU and the high need for care can cause stress-related symptoms, namely Post-Traumatic Stress Disorder (PTSD), anxiety,

depression and burnout syndrome (Cavalheiro, Moura Junior and Lopes, 2008; Mealer et al., 2012, 2018; Zhang, Huang and Guan, 2014; Siffleet et al., 2015). All the problems faced drain the energy, mind, concentration, physical and psychological health conditions of the nurse in various forms, for example being cynical and indifferent to patients, often ditching, often feeling dizzy, wanting to always change their jobs, and apathy towards the future of themselves. The results of the preliminary study through unstructured interviews in March 2018 with the head of the Intensive Care Unit and Reanimation in one of the government hospitals in Surabaya were in 2010 found that 34% of nurses requested for job rotation to another ward. In the period January-March 2018, there were 4 people (out of 44 ICU nurse) who asking for job rotation to other wards due to many factors including health issues. Stress may cause more severe psychological problems and this can have an impact on nurses' interactions with other health workers, nurses' jobs performance, and institution's reputation (Mariani, 2013).

It is important to understand factors correlated to nurses' stressors in ICU including perceived job burden, working condition, quality of nursing work life, perceived organizational support. This result may provide a solution for the nurse manager to ease level of stress among ICU Nurses.

MATERIALS AND METHODS

Research Design

This study is a part of bigger study conducted by researcher and become preliminary steps for constructing a model to develop resilience model. A correlational design was used to reveal relationship between job stress including quality of nursing worklife, job burden, and stress among ICU nurses. The factors were namely perceived job burden, working condition, quality of nursing work life, perceived organizational support were identified to correlated with stress of ICU nurses. This study conducted at Soetomo General Hospital, Universitas Airlangga Teaching Hospital, and Hajj General Hospital Surabaya, East Java, Indonesia.

Respondents

The respondents were recruited from three different hospitals using total population sampling method. The population included all staff nurses. This means that all nurses were involved to the study but not with those who in managerial level such as nurse unit manager and nurse unit coordinator. A total of 95 nurses were voluntary participated to the study but only 91 nurses completed all questionnaires. Those who did not fill in the questionnaire completely considered as drop out from the study.

Measurement tools

The data collection tools were single questionnaires on socio-demographic characteristic were designed

by researcher. In addition, the questionnaires for all variables were adopted from existing questionnaire. Researcher made some adjustment on the questionnaire and tested the validity and reliability of the questionnaires on April, 15 – May 3, 2018 to 26 at ICU Nurses in Darmo Hospital, Surabaya. Validity test was using Pearson product-moment with coefficient correlation > 0.5. Item no 13 on working condition tool was not considered valid. Researcher made modification on the sentence structure and diction to make it readable since this is an important question. Tools on perceived job burden, working condition, job stress and QNWL were considered reliable with result 0.936, 0.819, 0.732 and 0.840 respectively after tested using Alfa Cronbach. However tool for perceived organisational support was not reliable. Researcher reviewed and made modification before it was used. Translation was accomplished by researcher and proofread by Journal Development Team from Faculty of Nursing, Universitas Airlangga, Surabaya Indonesia.

Measurement tools to explore demographic data was developed by researcher based on current characteristic of nurses in public hospital in Surabaya. The demographic data included ages, work experience, gender, and level of education. Tools for job stress was adopted from Nursing job stress questionnaire from Nursalam (2015) consisted of 30 items. Likert scale was occupied using 4 scales from always to never choices. Tools for nursing workload was also adopted from Nursalam (2015) which is consisted of 12 question and using Likert scales with 4 scales from always to never choices. In addition for QNWL (Quality of Nursing Work Life was adopted from Brook (2001, cited from (Nursalam, 2015)) consisted of 42 statements and the chosen answers used Likert scales from very agree to very disagree. Organizational support questionnaire was adopted from Perceived Organizational Support (Eisenberger and Huntington, 1996) using Likert scale with very agree to very disagree choices for 25 statements.

Data Collection

Data was collected at July-September 2018. A questionnaire was completed with description of the study, consent procedure, response confidentiality and researcher's contact details. The questioner was completed independently by the respondents and collected by researcher in the same day. It took about two months to reached all respondents from three different hospitals and due to shift schedule and administrative process in the hospitals .

Data Analysis

Original data were inputted into excel spreadsheet and checked by researcher. All data were analyzed using the SPSS 20.00 software. Descriptive Analysis included frequency, percentages, means and standard deviation were used to provide descriptive data. Data was analysed using Pearson correlation to identify the influence between workload, working condition,

Table 1. Sociodemographic characteristic of respondents (n=91)

Variable	n	%
Age (years)		
<25	3	3.3
25-30	35	38.5
31-35	19	20.9
36-40	8	8.8
41-45	14	15.4
46-50	6	6.6
51-55	6	6.6
Work Experience (yrs)		
<1	7	7.7
1-5	37	40.7
6-10	19	20.9
11-15	9	9.9
16-20	11	12.1
21-25	5	5.5
26-30	3	3.3
Sex		
Male	32	35.2
Female	59	64.8
Level of Education		
Diploma 3	59	64.8
Bachelor	32	35.2

Table 2. Description of Independent and Dependent Variables

Variable	Mean	SD
Independent		
Perceived Job Burden	27.87	7.627
Working Condition	43.31	7.034
QNWL	146.48	17.363
Working Support	69.36	7.531
Dependent		
Physical stress	32.29	4.483
Psychological stress	60.94	7.625
Job Stress	93.24	11.33

Table 3. Correlation of Job Stress Among ICU nurses (Pearson's Correlation)

Variable	Job Stress of ICU Nurses	
	r	p-value
Perceived Job Burden	0.310	0.003
Working Condition	0.432	0.000
QNWL	0.389	0.000
Perceived Organisational Support	0.420	0.000

quality of nursing work life, perceived organizational support, and stress among ICU nurses. In this study the statistical level of significance was set at $p < 0.05$ for two sides.

Ethical Consideration

Ethical approval was obtained from the ethic committee of the three hospitals i.e Dr. Soetomo Hospital (No. 0325/KEPK/V2018), Hajj General Hospital (No. 073/11/KOM.ETIK/2018) dan Universitas Airlangga teaching hospital (No. 145/KEH/2018). Voluntary, confidentially, fair and harmless ethical principles were occupied in this study. We explained carefully the purpose, benefits and risk to the respondents before they asked to

participate to our study. All respondents who agree to involved in the study had been asked to sign the written informed consent freely. Respondent received tea set as a reward from researcher for their time and willing to participate to the study.

Significance of the study

Job stress can lead to an important impact on individual ICU nurses and their activities such as lack of concentration, decrease job motivation, emotionally vulnerable to patients and conflict with other health care worker. This situation may impair their job performance, decrease their job satisfaction and leads to medication errors. Thus, it is important to identify factors may correlated to job stress among ICU nurses.

RESULTS

Sociodemographic characteristic of respondents

A total of 95 questionnaires were distributed but 91 were completed and the rest was considered incomplete and invalid therefore indicating 94,8% returned rate. The majority of the respondent age at the range of 23 – 54 years. Level of education was dominated at D3 level (64,8%) with work experience at 1-5 yrs (40.7%). A total of 64.8 % was female nurses. Table 1 provide the other demographic data of the respondents.

Characteristic of Respondents

The characteristic of respondent described in the table 1. The vast majority of respondent were between 25-35 years old. Most of the respondents had work experience under 10 years where 37 % were under 5 years. Female were dominant staff compare to male staff. Respondents were mostly had diploma degree and none of them were graduated from post graduate degree and above.

Variable description

All variables of the study have been stated in the Table 2. The averages perceived job burden was 27,86 (SD=7.62). The working condition was in the average of 43.30 (SD=7.034) where as quality of nursing work life was in the average of 146.48 (SD=17.36). Organisational support has been perceived by the ICU nurse was an average of 69.36 (SD=7.531). The total average job stress among ICU nurses reached 93.24 (SD=11.33) as provided in table 3.

All variables of the study have been stated in the Table 2. The averages perceived job burden was 27,86 (SD=7.62). The working condition was in the average of 43.30 (SD=7.034) where as quality of nursing work life was in the average of 146.48 (SD=17.36). Organisational support has been perceived by the ICU nurse was an average of 69.36 (SD=7.531). The average job stress among ICU nurses reached 93.24 (SD=11.33).

DISCUSSION

Correlation between job stress and variables was analyzed using Pearson's correlation. The result showed that there was correlation between perceived job burden, working condition, QNWL and perceived support and nursing job stress.

Perceived Job Burden

Perceived job burden correlated with job stress among ICU nurses. This result is in line with previous study in Pakistan (Johan, Sarwar and Majeed, 2017) that job burden correlated with kind of stress among ICU nurses. Intensive care unit is considered as a high demand of care where nurses have to provide total care using sophisticated equipment such as ventilator, continuous renal replacement therapy infusion pump, syringe pump, portable X-ray and a lot of life-saving tools and medicines. This situation need more concentration and extra energy from nurses. In addition, in three public hospital in Surabaya, the ratio between nurse and patients is remain inappropriate to the standard in which based on observation of researcher frequently 2 nurses have to handle 3-4 ventilated patients. According to Ministry of Health of Indonesia (2006) ratio nurse – patient for ventilated patients is 1:1 and 1: 2 for unventilated patients. However, in this three hospital this ideal ratio was difficult to apply due to nursing shortages in each hospital particularly in Soetomo Hospital. Soetomo Hospital provides tertiary ICU care and as referral hospital in eastern part of Indonesia. Meanwhile, from the researcher observation, nurse also had to handle other administrative task such as patient's billing, and etc. As the consequence, nurse workload was high and correlated with level of stress.

Working condition

Working condition was correlated with job stress among ICU nurses. It has been known that working in ICU it takes a thoughtful task, quick thinking, and dedication to achieve the advanced skills necessary for the job. Handling difficult patients is a frequent cause of stress for ICU nurses (Vahedian-azimi et al., 2017). The results of this study support previous studies that work conditions are related to the stress level of ICU nurses (Andolhe et al., 2016). In Surabaya, unpleasant working condition in ICU may include alarms, restricted area, sophisticated machines which may not all nurses able to operate, fluid body secretion, limited time to communicate with other staff and health care worker, un-cooperative patient's relatives, unstable and unpredicted situation. In this study, most of nurses had work experience at under 10 years (more than 69.2%) and under 5 years (37 %) and they still in the journey of mastering all equipment which is not easy and may find it difficult to adapt with. Some of the nurses were also still learn about such procedures and also may not confidence to communicate with patients' family and other

health care professional, especially those who experienced under 1 year.

Quality of nursing work life

Quality of nursing work life correlated to job stress of ICU nurses. This result was in accordance with present study that there was a correlation between job stress and QNWL (Roshangar et al., 2017). It has been widely accepted that staff nurse are challenging with relatively stressful work environment including irregular scheduling or shifting and socio-emotional pressures related to the patients and their own family almost every day (Jaafarpour, Khani and Mahmodian, 2015). In addition, due to the complex nature of working in critical care, nurses in the ICU encounter more pressure and stress than general ward nurse. This situation may be worsen when the nurse relates the distress from a patient's situation with one in his/her own personal life. Furthermore another study found that Nurse's high work pressure declines QWL. Thus, nurses often are deprived of energy and are not able to stabilize their work life and family life (Roshangar et al., 2017). Based on the characteristic of respondents of this study, the majority (59,4 %) of them are in the productive ages (25-35 year old) where they are just starting a family and busy with domestic chores and taking care of their children. It could be understood that nurses are still struggling to balancing between working-life and personal-life.

Perceived organizational support

This study revealed that there was correlation between perceived organizational support and nursing job stress. This result was in the contrary with recent study that there was a negative relationship between nurses' job stress and organizational support (Roshangar et al., 2017). This different result may be due to different participant of the study. This study was for ICU nurses whereas another study conducted for all type of nurses. However, a research found that there was correlation between organizational support and job stress among nurses at Saudi Public Hospital (Al-homayan et al., 2013). The study also confirmed that nurses who received organizational support performed a better job than being stressed at work by mitigating the effect of job stress on job performance (Al-homayan et al., 2013). ICU nurses who provide total care for critically ill patients have to adapt to a fast-paced and stressful environment by functioning within their own culture. Therefore organizational support is needed to keep nurses work on their best performance and lighten adversity in the workplace.

CONCLUSION

The result of this study revealed that most of the participant had work experience less than 10 years and most of them were at the age of under 35 years. There were significant correlation between workload, working condition, QNWL and perceived

support and nursing job stress. Based on the study result, it is important for the management of hospital to provide more attention on the nurses' psychological and personal aspect to help them bounce back from difficult situation in the workplace. Such of education or training is required to help nurses adapt with difficult situation in a better way. Another research is also needed to develop method with respect to the requisite of the education or training.

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Original Research

Effort to Prevent Anaemia during Menstruation among Female Adolescent in Islamic Boarding School**Esti Yunitasari, Praba Diyan Rachmawati and Desy Indah Nur Lestari**

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ABSTRACT

Introduction: Female adolescents are generally prone to be infected by anaemia due to the growing menstruation cycle which causes the loss of bloods in significant amount every month and the needs of ferrum substance can be doubled. The aimed of the research was to analyse factors related to the effort of anaemia prevention during menstruation among female adolescents in Islamic boarding school.

Methods: This research applied correlational descriptive design through the approach of cross-sectional study. Total samples were 214 female students in 3 Islamic boarding schools with criteria of female students aged 11-20 years old and had experienced menstruation. Sample obtained by random sampling. Independent variables were knowledge, attitude, friends support, health facility, health efforts, and dependent variables was the efforts to prevention anaemia. Data obtained by questionnaire and analyzed by Spearman Rho with significance level $\alpha, 0.005$

Results: The result showed significant correlation between knowledge ($p=0.000$; $r=0.318$). attitude ($p=0.001$; $r=0.232$). friends support ($p=0.003$; $r=0.203$). health facility ($p=0.000$; $r=0.260$). and health efforts ($p=0.001$; $r=0.227$) on prevention effort of anaemia on adolescents female menstruation in Islamic boarding school.

Conclusion: Level of knowledge, positive attitude, friends support, health facility, and health efforts can prevent anemia during menstruation.

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KEYWORDSanaemia; knowledge; attitude
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INTRODUCTION

Anaemia is a condition whereby the level of haemoglobin (Hb) within blood is lower than the normal scale (World Health Organization, 2011). Diagnosis of anaemia can be upheld once the degree of haemoglobin is <12 g/dl on female and <13 g/dl on male. Anaemia needs to be overcome due to its ability to degrade body endurance, hence, sufferers of anaemia are prone to infectious disease. it can reduce physical fitness. and thinking agility due to the lack of oxygen support to muscle cell and in the other hand. It may also decrease learning achievement and work productivity (Kementrian Kesehatan Indonesia, 2016). Female adolescents are prone to anaemia. the existence of monthly menstruation cycle is one of the causal factors of female adolescents to be infected by anaemia even it was supported by their fine understanding over anaemia (Mularsih, 2017)

The number of anaemia cases for adolescents in 2011 stood at 11.7% and 6.7% of these anaemia evidences occurred during the period of menstruation (Dinas Kesehatan Jawa Timur, 2011). The Regional Office of Public Health of Tuba district had administered during the last 5 years that there has been 69 cases for maternal death (Dinas Kesehatan Kabupaten Tuban. 2016). The symptom of maternal death can be generated from a number of diseases which may worsen maternal condition before and after giving birth. One of the symptoms of maternal death is intensive bleeding during childbirth due to the mother during her adolescence experienced prolonged. unhandled. and sustained anaemia until her childbirth moment. This issue has been proven to the population of boarding school when the researcher was undertaking preliminary data collection on 18 March 2018 in Boarding School of X. Tuban it was identified that 8 out of 10 female

students experienced the symptoms of anaemia in times of menstruation. The complained over headache, body weakening, lethargic and weary over their bodies. Another few numbers were also complained to be sleepy in times of performing regular activities at school.

The importance of countermeasure program against anaemia towards female adolescents is for the female adolescents to be physically prepared before pregnancy in order to be fit to become a healthy mother, and during their pregnancy are immune to anaemia. Therefore, it is necessary to perform the research regarding the effort to prevent anaemia for female adolescents based on the level of understanding over anaemia, attitude, and friends support, and health efforts in the effort of preventing anaemia to infect female adolescents in Islamic boarding school.

The purpose of this study was to explain the factors related to the effort of anemia prevention during menstruation on female adolescents in Islamic boarding school.

MATERIALS AND METHODS

The research was cross sectional design, population were female adolescents studying in 3 different boarding schools that chose randomly in Tuban in July 2018. Total sample obtained 214 respondents by random sampling. Independent variables were knowledge, attitude, friends support, health facility, health efforts, and dependent variables are the effort of anaemia prevention. To pretend bias we used inclusion criteria including adolescents aged between 11-20 years old and had experienced menstruation.

Data is generated through questionnaire arranged by Puspah (2017). Knowledge questionnaire consists of 10 questions with score of 0 to 2. Category: favourable knowledge (76-100%), adequate knowledge (56-76%), and deficient knowledge ($\leq 55\%$), and obtained chronbach alfa 0.893. Attitude questionnaire consists of 16 questions with score between 0-5 and minimum score to be achieved was 0 and maximum score was 80. Category: positive ($\geq 62.5\%$) negative ($< 62.5\%$) and obtained chronbach alfa 0.939.

Friends support questionnaire consists of 7 questions with optional answer of 0 to 4 with maximum score of 28 and minimum score of 0. Category: Favourable support (76-100%), adequate support (56-76%), deficient support ($\leq 55\%$), and obtained chronbach alfa 0.811. Health facility questionnaire consists of 5 questions with optional answer of 0 to 2, the maximum score was 10 and the minimum score was 0. The category: favourable (76-100%), adequate (56-75%), deficient ($\leq 55\%$) and obtained chronbach alfa 0.783.

Health efforts questionnaire consists of 6 questions with range answers are 0 until 4, the maximum score is 0 and the minimum score was 24. Category: favourable (76-100%), adequate (56-75%), deficient ($\leq 55\%$), and obtained chronbach alfa 0.779.

The questionnaire of effort to prevent anaemia consists of 6 questions with optional answers from 0 to 4, the maximum score was 24 and the minimum score was 0. The category: favourable (76-100%), adequate (56-75%), deficient ($\leq 55\%$) and obtained chronbach alfa 0.783.

The data analyzed by using Spearman Rho with level of significance $\alpha < 0.005$. This research has been declared to have passed the ethical review and obtained an Ethical Approval certificate with No. 992 - KEPK issued by the Nursing Faculty of Airlangga University.

RESULTS

Table 1 shows that during these ages' respondents were situated in all levels of adolescences but can be discovered more in the middle level of adolescence that is between 15-17 years old amounting to 48.6 %. Early adolescents (11-14 years old) in the amount of 76 respondents or 35.5% and late adolescents (18-20 years old) amounting to 34 or 15.8%. The majority of respondents encountered menstruation for the first time in the age of 9-12 years old in amount of 144 respondents or equivalent to 67.3% and those with the first menstruation in the age of 13 years onwards is around 70 respondents or 32.7% and half of the respondents are studying in high school level that is as much as 107 respondents (50%).

The result of this analysis shows the existence of connection between knowledge with the effort of anaemia prevention during menstruation ($p=0.000$; $r=0.318$). It can be inferred that the occurred relationship is weak. The particular analytical result unveils the existence of connection between attitude and the effort of anaemia prevention during menstruation with weak relationship ($p=0.001$; $r=0.232$). The friends support also correlate with the effort of anaemia prevention during menstruation ($p=0.003$; $r=0.203$). The relationship between health facility with the effort of anaemia during menstruation obtained a weak relationship ($p=0.000$ and $r=0.260$), and the relationship there is a weak correlation between health-based undertaking with the effort of anaemia prevention during menstruation ($p=0.001$; $r=0.227$).

DISCUSSION

Knowledge

The relationship between knowledge with the effort of anaemia prevention in times of menstruation. From the aforementioned illustration, it can be inferred that the result is a weak result. This is shown by a favourable percentage over knowledge that is closely equivalent. Frequency distribution of knowledge and the effort of anaemia prevention with the largest percentage can be found in the categories of favourable and deficient. This is influenced by the educational background of respondents who in majority are sitting in high school due to an existing probability that these students obtained the

information regarding anaemia through the subject of science. although living in boarding school. female adolescents are also obtaining the similar general education with those who are not living in boarding school. Education is a prominent factor for those who pay critical attention to preserve their health. However, every of which will be ended up in vain should the intention is not accompanied with awareness and willingness to commence change in their undertakings (Makhfudli, Rachmawati, and Andini, 2017).

The relationship between knowledge and anaemia prevention effort for female adolescents illustrates that female adolescents with minimum knowledge over anaemia leads themselves to the lack of self-awareness to initiate the effort of anaemia prevention. The result if this research is in line with the research carried out by (Mularsi, 2017) whereby respondents with favourable knowledge over anaemia tends to behave supportive to the prevention of anaemia in times of menstruation. in contrary. the respondents with deficient knowledge over anaemia were unlikely to behave supportive in the effort of anaemia prevention in times of menstruation. The other supportive research was carried out by (Puspah, 2017) regarding the factors connected to the prevention of anaemia towards female adolescents in accordance with Lawrence Green theory in SMPN Banjarbaru, Banjarbaru City. South Kalimantan. which shows the existence of relationship between knowledge and anaemia prevention.

Knowledge is determined by education. information from mass media. socio-culture. family support. environment. and age. According to (Leiniger, 2002), background of education is influential to the absorbance of information, a person who possess high level of education will also be equipped with a favourable knowledge. Knowledge without favourable education will allow an individual to commit unfavourable decision.

Attitude

Respondents have positive attitude over the prevention of anaemia. those are amounting to 24 respondents (11.2%). in the other hand. respondents with negative attitude are entirely have deficient effort of anaemia prevention in amount of (17.8%). This finding implies that the better the attitude of respondents. it may increase the effort of anaemia prevention in times of menstruation. Therefore, it can be concluded that there is a relationship between attitude and the effort of anaemia prevention in times of menstruation for female adolescents in Boarding schools within the area of Jen, Tuba District. This research is linier with the research carried out by (Caturyaningtyas, 2015) regarding the relation between knowledge. attitude. and behaviour with the case of anaemia towards female adolescents in grade X and XI of State Senior High School 1 Polokarto which mentioned that there is a relationship between attitude and the case of anaemia within female

adolescents in grade X and XI State Senior High School 1 Polokarto. The research of (Panyuluh and Nugraha, 2018) mentioned that there is no significant relationship between attitude and anaemia prevention within female adolescents in Darul Ulum Islamic Boarding School, Kendal District.

According to Notoatmojo (2012) attitude is not yet to be determined as a form of action or activity. However, it was a pre-disposition of actions towards a certain behaviour. The attitude of an individual is in line with the level of knowledge they previously attained. Positive attitude shapes positive behaviour. and vice versa. This matter is linier with Sarwono on Ningrum (2011), that the change of attitude within an individual start with identification step and later on become internalization. Female students with favourable behaviour towards the effort of anaemia prevention own empathy towards the anaemia prevention in times of menstruation.

Friends support

The amount of respondent with the friends support is deficient (69.63) or a number of 149 respondents are in adequate category in the effort of anaemia prevention (31.8%) and the category of deficient in the effort of anaemia prevention in times of menstruation (33.2), this shows that female adolescents with deficient support from friends with the same age will commence a minimum effort to anaemia prevention primarily in the sense of supports from friends with the same age to obtain iron supplement.

According to Yuswanto (2015) the friends support was a support given for and by a person in similar situation. The similar support consists of an individual who experiences the same challenges with a medical patient who suffer certain infection. certain community. and individuals with similar problems. Hurlock (1980) and Luthfi (2012) argue that social support from friends with the same age is realized in form of the feeling of shared fate which nurtures the existence of understanding relationship towards each other's problem. advice-giving and sympathy that are not obtainable from parents due the parents contribute in desicion making of an adolescent (Yunitasari, Pradanie, and Susilawati, 2016).

Medium of health

The relationship established within it is a weak relationship and the relationship among these two variables are single-oriented which means the better the health facility obtained. hence. the better as well the effort of anaemia prevention in times of menstruation towards female adolescents in Islamic boarding school. The relationship between health facility with the effort of anaemia prevention in times of menstruation towards female adolescents in Islamic boarding school. The best value is discovered in the statement which unveils that in Islamic boarding school. logistic has provided foods with rich containment of protein and ferrum substance including tofu, soybean, egg, green vegetable in daily

manner. Meanwhile, the least value can be found in the statement which unveils that in Islamic boarding school there is an absence of blood cell examination tools for female students. The research which against this statement is the research carried out by (Panyuluh and Nugraha, 2018) which mentioned that there is no significant relationship between the availability of health facility towards anaemia prevention for female students of Darul Ulum Islamic Boarding School, Kendal District.

Health supports

The relationship established within it is a weak relationship and the relationship among these two variables are single-oriented which means the better the health efforts committed. hence. the better as well the effort of anaemia prevention in times of menstruation towards female adolescents in Islamic boarding school.

Almost half of the respondents have deficient health efforts (67.29%) from the number of respondents who have uncertain health efforts in the number of 144. There are 73 respondents who are identified with deficient health efforts. This explanation shows that the less the health-relating undertaking committed. the less as well the effort of anaemia prevention in times of menstruation within adolescents in Islamic boarding school. The existence of relationship between health efforts with the effort of anaemia prevention shows the female adolescents with lack of action in responding to health issues are also lack in undertaking prevention effort to anaemia primarily in the case of stockpiling iron supplement.

CONCLUSION

The factors that are influential towards the effort of anaemia prevention in times of menstruation for female adolescents in Islamic boarding school are knowledge. attitude. friends support. health facility. and health efforts. From the aforementioned factors. the most influential factor is the knowledge of female students over the effort of anaemia prevention.

It is expected that Islamic boarding school as a stakeholder seeks to preserve the availability of healthy and nutritious food as well as for health entities to be able to intensify promotional and preventive events over the importance of anaemia prevention towards adolescents in times of menstruation.

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Original Research

Reliability and Validity Test of the Indonesian Version of the Hamilton Anxiety Rating Scale (HAM-A) to Measure Work-related Stress in Nursing**Iwan Muhamad Ramdan**

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ABSTRACT

Introduction: Specific work characteristics have placed nurses as one of the professions with a high level of work-related stress. If not managed properly, work-related stress can cause adverse effects. Signs of stress can be seen in people's behavior, thinking or physical symptoms. One of a subjective measurement tool that is widely used to measure work-related stress is the Hamilton Anxiety Rating Scale (HAM-A), however, the literature that discusses the results of the HAM-A translation, validity and reliability test in the nurse profession is still limited. This study aims to translate HAM-A into the Indonesian version, then test its validity and reliability in nurses.

Methods: A Cross-sectional study with stratified random sampling method was conducted on 98 nurses from July to August 2018. The English version of HAM-A consists of 14 items has been a translation into Indonesian version. Pearson Product Moment Correlation was used to evaluate the construct validity and Cronbach's alpha scores were used to assess the internal consistency reliability of the Indonesian version of HAM-A.

Results: Item construct validity based on the Pearson correlation ranged from 0.529 to 0.727, Cronbach's alpha reliability was obtained at 0.756.

Conclusion: The Indonesian version of the HAM-A fulfills the criteria of a reliable (fair acceptable criteria) and valid (good criteria) assessment tool to assess the work-related stress in the nursing profession.

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INTRODUCTION

Work-related stress is the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope (World Health Organization, 2007)(International Labour Organization, 2016). Previous research concluded that work-related stress is associated and increase an individual's vulnerability to burnout, job satisfaction and physical as well as mental health outcomes (Piko, 2006; Pillay, 2009). Other health problems related to the effects of work stress include: cardiovascular disorders (Li, Loerbroks, Bosma, & Angerer, 2016), gastrointestinal disorders (Huerta-Franco, 2013), musculoskeletal disorders (Nafeesa, Vidhya, Vijayalakshmi, & Rajkumar, 2017), anxiety and

depression (Fan, Blumenthal, Watkins, & Sherwood, 2015), work fatigue (Rose et al., 2017), insomnia (Deguchi et al., 2017), alcohol abuse (Moore, Sikora, Grunberg, & Greenberg, 2007), decrease marital quality (Obradović & Čudina-Obradović, 2013) and disruption of social interaction (La Torre et al., 2018).

Specific work characteristics such as working time, length of interaction with patients, emotional nature of patient demands and inter-professional relationships are prone to conflict (Khamisa, Peltzer, Ilic, & Oldenburg, 2017). Sources of work-related stress of nursing consist of working environment (physical, psychological and social environment factors), interpersonal relationships, nature of nursing, organizational factors, role characteristics and individual characteristics (Moustaka & Constantinidis, 2010). Work-related stress if not

managed properly can cause adverse effects, including emotional disturbances, behavioral problems, biochemical and neurohormonal changes, presenting added risks of mental or physical illness. Conversely, well managed work-related stress will create a feeling of mastery and self-confidence; increases motivation, working capacity and satisfaction; and improves health (Vernekar & Shah, 2018).

Signs of stress can be seen in people's behavior changes. Acute responses to stress may be in the areas of feelings (for example, anxiety, depression, irritability, fatigue), behavior (for example, being withdrawn, aggressive, tearful, unmotivated), thinking (for example, difficulties of concentration and problem solving) or physical symptoms (for example, palpitations, nausea, headaches). If stress persists, there are changes in neuroendocrine, cardiovascular, autonomic and immunological functioning, leading to mental and physical ill health (for example anxiety, depression, heart disease) (Michie, 2002). Anxiety symptoms are serious and critical problems in the occupational context and they can be associated with stress (Vignoli, Muschalla, & Mariani, 2017).

One subjective measurement tool that is often used to measure work-related stress is the Hamilton Anxiety Rating Scale (HAM-A) (Thompson, 2015). HAM-A was one of the first rating scales developed to measure the severity of anxiety symptoms, being considered one of the most popular assessment instruments widely used rating scales both clinical and research settings/general health psychology, has been widely translated into various languages in the world and is widely used to measure work stress in various types of work (López-Pina, Sánchez-Meca, & Rosa-Alcázar, 2009; Thompson, 2015). Research using HAM-A to assess work-related stress among others: Karanikola et al (2016) who examined anxiety symptoms and quality of interaction among Greek oncology nurses, and Craiovan (2015) which examines burnout, depression, and quality of life among the Romanian employees working in non-governmental organizations. The HAM-A has been translated into Cantonese for China, French, Urdu, and Spanish, however, the literature that discusses the results of the HAM-A translation, validity and reliability test in the nurse profession in the Indonesian version is still limited.

To make the HAM-A accessible for the use in an Indonesian setting, especially in the nursing profession, this study aims to translate HAM-A into the Indonesian version, then test its validity and reliability among nurses in Indonesia.

MATERIALS AND METHODS

Design of Study and Participants

A Cross-sectional study was conducted among 98 nurses at one of the government hospitals in East Kalimantan from July to August 2018. The research sample was taken stratified randomly from all

departments (operation room, hemodialysis room, emergency room, internist room, pulmonary room, surgery care room, medical checkup, and polyclinics). Determination of respondents using random sampling method (Singh & Masuku, 2014). All members of the nurse population are given a serial number, the serial number is written on small paper and rolled up, then inserted into a closed glass which is given a small hole, the researcher then shakes the glass, each number that comes out is made a respondent.

Instruments

The English version of Hamilton Anxiety Rating Scale (HAM-A) consists of 14 items, each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety) (Hamilton, 1959; Maier, Buller, Philip, & Heuser, 1988).

The dimension of HAM-A consist of: (1) Anxious mood: Worries, anticipation of the worst, fearful anticipation, irritability; (2) Tension: Feelings of tension, fatigability, startle response, moved to tears easily, trembling, feelings of restlessness, inability to relax; (3) Fears: Of dark, of strangers, of being left alone, of animals, of traffic, of crowds; (4) Insomnia: Difficulty in falling asleep, broken sleep, unsatisfying sleep and fatigue on waking, dreams, nightmares, night terrors; (5) Intellectual: Difficulty in concentration, poor memory; (6) Depressed mood: Loss of interest, lack of pleasure in hobbies, depression, early waking, diurnal swing; (7) Somatic (muscular): Pains and aches, twitching, stiffness, myoclonic jerks, grinding of teeth, unsteady voice, increased muscular tone; (8) Somatic (sensory): Tinnitus, blurring of vision, hot and cold flushes, feelings of weakness, pricking sensation; (9) Cardiovascular symptoms: Tachycardia, palpitations, pain in chest, throbbing of vessels, fainting feelings, missing beat; (10) Respiratory symptoms: Pressure or constriction in chest, choking feelings, sighing, dyspnea; (11) Gastrointestinal symptoms: Difficulty in swallowing, wind abdominal pain, burning sensations, abdominal fullness, nausea, vomiting, borborygmi, looseness of bowels, loss of weight, constipation; (12) Genitourinary symptoms: Frequency of micturition, urgency of micturition, amenorrhea, menorrhagia, development of frigidity, premature ejaculation, loss of libido, impotence; (13) Autonomic symptoms: Dry mouth, flushing, pallor, tendency to sweat, giddiness, tension headache, raising of hair; (14) Behavior: Fidgeting, restlessness or pacing, tremor of hands, furrowed brow, strained face, sighing or rapid respiration, facial pallor, swallowing, etc.

Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where <17 indicates mild severity, 18–24 mild to moderate severity and 25–30 moderate to severe (Maier et al., 1988). HAM-A is comprised of a psychic and a somatic subscale. The psychic subscale (items 1-6 and 14)

addresses the more subjective cognitive and affective complaints of anxiety (e.g., anxious mood, tension, fears, difficulty concentrating), and is particularly useful in assessing the severity of general anxiety disorders (GAD). The somatic component (items 7-13) emphasizes the features of GAD such as autonomic arousal, respiratory, gastrointestinal and cardiovascular symptoms (Katherine Shear et al., 2001).

Cross-cultural Process of Daptation and Translation

The questionnaire was translated according to the guidelines for cross-cultural adaptation of self-report measures by Beaton et al (2000). The guidelines consists of five stages: (1) Translation by two bilingual translators (native Indonesian), then they discuss and identify the selection of appropriate words so that they can reflect clinical symptoms and the language used by the general population; (2) Synthesis, both translators and an observer discuss to get a combined translation; (3) back translation by two bilingual translators (native English), the results of a combined translation in Indonesian are translated back into English by two translators with the aim of checking the validity of the translation process and ensuring the translated version reflects the same meaning as the original version; (4) evaluation by a team of experts consisting of forward and backward translators, epidemiologists and health professional experts, this was intended to consolidate all versions of the instrument and develop a prefinal version of the instrument for use in field testing; (5) pre-testing in a group of 98 nurses in operation rooms, hemodialysis rooms, emergency rooms, internist rooms, pulmonary rooms, surgery care rooms, medical checkups, and polyclinics. The final results of the HARS translation into Indonesian can be seen in table 2. pre-testing in a group of 98 nurses in operation room, hemodialysis room, emergency room, internist room, pulmonary room, surgery care room, medical checkup, and polyclinics. The final results of the translation into Indonesian can be seen in table 2.

Statistical Analyses

Data were analyzed by the Statistical Package for the Social Sciences (SPSS ver. 21, Chicago, IL, USA), in order to describe continuous and qualitative variables, mean, standard deviation (SD) and percentage frequency were used respectively. 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. HAM-A 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; Terwee et al., 2007). Cronbach's alpha scores with split half method were used to assess the internal consistency reliability of the HAM-A questionnaire. A value below 0.70, the questionnaire is 'unacceptable' a value between 0.70 and 0.79 is considered 'fair', a value between 0.80 and 0.89 considered 'good', and a value 0.90 and above considered 'excellent' (Cicchetti, 1994; Nunnally & Bernstein, 1994; Michalopoulos et al. 2015; Taber, 2018).

RESULTS

Respondent characteristics

The majority of respondents in this study were 20-30 years old (46.9%), the majority of respondents were women (77.6%), mostly married (82.7%), worked more than 5 to 10 years (45.9%) and mostly graduated from diploma III in nursing (80.6%) (table 1).

The result of validity and reliability test of HAM-A Indonesian version

As is shown in table 3, the mean of the total HAM-A score was 10,58 ($\pm 5,82$). The 4th item on "Insomnia (difficulty in falling asleep, broken sleep, unsatisfying sleep and fatigue on waking, dreams, nightmares, night terrors)" showed the highest score (1,11, $\pm 0,73$), whereas the 10th item on "Respiratory symptoms (pressure or constriction in chest, choking feelings, sighing, dyspnea)" had the lowest score (4,1 $\pm 0,64$). The largest and smallest variance was also observed in item 2 and item 4 (0,53) and item 1 (0,37), respectively. The smallest Pearson correlation value is 0.529 (item number 11 on "Gastrointestinal symptoms (difficulty in swallowing, wind abdominal pain, burning sensations, abdominal fullness, nausea, vomiting, borborygmi, looseness of bowels, loss of weight, constipation)", and the largest Pearson correlation is 0.727 (item number 6 on "Depressed mood: loss of interest, lack of pleasure in hobbies,

Table 1. Characteristics of respondents (n=98)

Characteristics	n	%
Ages		
20-30	46	46.9
>30-40	43	43.9
>40-50	9	9.2
Gender		
Male	22	22.4
Female	76	77.6
Marital Status		
Married	81	82.7
Not married	15	15.3
Ever married	2	2
Working Experience		
0-5	35	35.7
>5-10	45	45.9
>10-15	13	13.3
>15-20	5	5.1
Level of Education		
Diploma III in nursing	79	80.6
Strata 1 in nursing	19	19.4
Total	98	100

Table 2. The Hamilton Anxiety Rating Scale (HAM-A): Original (English)(Hamilton, 1959) and Translated (Indonesian) Version.

	Original version	Indonesian version
Item 1	Anxious mood (Worries, an anticipation of the worst, fearful anticipation, irritability)	Perasaan cemas (merasa khawatir, firasat buruk, takut akan pikiran sendiri, lekas marah atau mudah tersinggung)
Item 2	Tension (Feelings of tension, fatigability, startle response, moved to tears easily, trembling, feelings of restlessness, inability to relax)	Ketegangan (merasa tegang, merasa lelah, respon yang mengejutkan, mudah meneteskan air mata, merasa gemetar, merasa gelisah, tidak mampu untuk bersantai)
Item 3	Fears (Of dark, of strangers, of being left alone, of animals, of traffic, of crowds)	Ketakutan (takut terhadap gelap, takut terhadap orang asing, takut ditinggalkan sendirian, takut pada hewan, takut pada keramaian lalu lintas, takut pada kerumunan orang banyak)
Item 4	Insomnia (Difficulty in falling asleep, broken sleep, unsatisfying sleep and fatigue on waking, dreams, nightmares, night terrors)	Insomnia (kesulitan tidur, tidur tidak memuaskan, merasa lelah saat bangun, mimpi buruk, terbangun tengah malam)
Item 5	Intellectual (Difficulty in concentration, poor memory)	Intelektual (sulit berkonsentrasi, sulit mengingat)
Item 6	Depressed mood (Loss of interest, lack of pleasure in hobbies, depression, early waking, diurnal swing)	Perasaan depresi (kehilangan minat, kurangnya kesenangan dalam hobi, perasaan bersedih, sering terbangun dini hari saat tidur malam)
Item 7	Somatic (muscular) (Pains and aches, twitching, stiffness, myoclonic jerks, grinding of teeth, unsteady voice, increased muscular tone)	Gejala somatik (otot) (nyeri atau sakit otot, kedutan, otot terasa kaku, gigi gemertak, suara tidak stabil, tonus otot meningkat)
Item 8	Somatic (sensory) (Tinnitus, blurring of vision, hot and cold flushes, feelings of weakness, pricking sensation)	Somatik (sensorik) (Telinga terasa berdenging, penglihatan kabur, muka memerah, perasaan lemah, sensasi ditusuk-tusuk)
Item 9	Cardiovascular symptoms (Tachycardia, palpitations, pain in chest, throbbing of vessels, fainting feelings, missing beat)	Gejala-gejala kardiovaskular (takikardi, palpitasi, nyeri dada, denyut nadi meningkat, perasaan lemas/lesu seperti mau pingsan, denyut jantung serasa berhenti sekejap)
Item 10	Respiratory symptoms (Pressure or constriction in chest, choking feelings, sighing, dyspnea)	Gejala pernapasan (nafas terasa sesak/dada terasa ditekan, perasaan tercekik, sering menarik nafas dalam, nafas pendek/tersengal-sengal)
Item 11	Gastrointestinal symptoms (Difficulty in swallowing, wind abdominal pain, burning sensations, abdominal fullness, nausea, vomiting, borborygmi, looseness of bowels, loss of weight, constipation)	Gejala gastrointestinal (kesulitan menelan, nyeri perut, perut terasa kembung, sensasi terbakar, perut terasa penuh, merasa mual, muntah, sukar buang air besar/BAB, kehilangan berat badan, konstipasi)
Item 12	Genitourinary symptoms (Frequency of micturition, urgency of micturition, amenorrhea, menorrhagia, development of frigidity, premature ejaculation, loss of libido, impotence)	Gejala genitourinari (frekuensi berkemih meningkat, tidak dapat menahan air seni, tidak datang bulan, darah haid lebih banyak dari biasanya, gairah sex menurun, ejakulasi dini, kehilangan libido, impotensi)
Item 13	Autonomic symptoms (Dry mouth, flushing, pallor, tendency to sweat, giddiness, tension headache, raising of hair)	Gejala otonom (mulut kering, muka kemerahan, muka pucat, sering berkeringat, merasa pusing, kepala terasa berat, merasa tegang, rambut terasa menegang)
Item 14	Behavior (Fidgeting, restlessness or pacing, tremor of hands, furrowed brow, strained face, sighing or rapid respiration, facial pallor, swallowing, etc.)	Tingkah laku (gelisah, tidak tenang/sering mondar-mandir, tangan gemetar, alis berkerut, wajah tegang, sering mendesah atau pernapasan cepat, wajah pucat, sering menelan ludah, dll.)

depression, early waking, diurnal swing"). Based on the previous criteria, it can be concluded that all of the HAM-A items in Indonesian version are declared "fair" or in this study called as a valid because Pearson correlation (r) ranged between 0.5 and 0.7.

If item question number 2 "Tension: Feelings of tension, fatigability, startle response, moved to tears easily, trembling, feelings of restlessness, inability to relax" is deleted this can increase Cronbach's alpha coefficient by 0.753, If item question number 12 "Genitourinary symptoms (frequency of micturition, urgency of micturition, amenorrhea, menorrhagia, development of frigidity, premature ejaculation, loss

of libido, impotence)" is deleted this can increase Cronbach's alpha coefficient by 0.745 and if item question number 5 "Intellectual (difficulty in concentration, poor memory)" is deleted this can increase Cronbach's alpha coefficient by 0.744.

To get the Indonesian version of HAM-A with the highest level of reliability, it is recommended that item number 2 "Tension: Feelings of tension, fatigability, startle response, moved to tears easily, trembling, feelings of restlessness, inability to relax" be omitted so that Cronbach's Alpha coefficient becomes 0.753. But in general, the combination of all 14 items of HAM-A has shown the fair reliability (or

Table 3. Descriptive Characteristics and the Pearson Correlation of Each Data for Internal Consistency of Indonesian Version of the HAM-A Questionnaire (n=98)

Item	Mean	SD	Pearson correlation (r)	p	Corrected item/total correlation	Cronbach's alpha if item deleted
Item 1	0.64	0.613	0.599	0.000	0.586	0.743
Item 2	0.96	0.731	0.697	0.000	0.702	0.753
Item 3	0.66	0.657	0.537	0.000	0.574	0.742
Item 4	1.11	0.731	0.600	0.000	0.587	0.740
Item 5	0.87	0.715	0.550	0.000	0.565	0.744
Item 6	0.86	0.603	0.727	0.000	0.750	0.743
Item 7	0.88	0.703	0.672	0.000	0.673	0.738
Item 8	0.72	0.662	0.629	0.000	0.640	0.738
Item 9	0.46	0.715	0.629	0.000	0.702	0.738
Item 10	0.41	0.645	0.562	0.000	0.651	0.741
Item 11	0.83	0.589	0.529	0.000	0.618	0.741
Item 12	0.82	0.626	0.693	0.000	0.526	0.745
Item 13	0.82	0.648	0.569	0.000	0.714	0.737
Item 14	0.55	0.628	0.569	0.000	0.562	0.743
Total score	10.58	5.82	1		-	-

in this study called as a reliable) with Cronbach's alpha coefficient of 0,756. This result generally shows the Indonesian version of HAM-A is reliable to measure work-related stress in nurses.

DISCUSSION

Validity expresses the degree to which a measurement measures what it purpose to measure. Validity tests are categorized into two broad components namely; internal and external validities. Internal validity refers to how accurately the measures obtained from the research was actually quantifying what it was designed to measure whereas external validity refers to how accurately the measures obtained from the study sample described the reference population from which the study sample was drawn (Bolarinwa, 2015). Reliability is the extent to which a measurement of a phenomenon provides stable and consist result (Taherdoost, 2016), and Cronbach's alpha is an accurate estimate of reliability and the Spearman-Brown formula is an accurate method to calculated reliability coefficient (Eisinga, Grotenhuis, & Pelzer, 2013). According to Ursachi, Horodnic, & Zait (2015), the Cronbach Alpha coefficient between 0.6-0.7 indicates an acceptable level of reliability, and 0.8 or greater a very good level.

The finding of the present study indicates that the Indonesian version of the HAM-A has a high enough internal and external validity, which can reveal the causal relationship between independent and dependent variables related to work-related stress in nursing with generalized results. This can be seen from the correlation coefficient (r) of the Pearson Product Moment between the item score and the total score ranging from 0.529 (min) to 0.967 (max) with a significant positive correlation ($p = 0.000$). In accordance with Bryman's (2001) opinion that internal validity is common to refer to the factor that has a causal impact as the independent variable and the effect as the dependent variable, and Mc Dermot's (2011) opinion that external validity refers to the generalizability of findings from a study, or the extent

to which conclusions can be applied across different populations, settings, treatments, and outcomes

In this study, the English version of HAM-A was translated into Indonesian language and the reliability and validity of the Indonesian version of the HAM-A were investigated using a representative sample of nurses from various aspect i.e department/care rooms, age, marital status, educational level, and work experience, the finding indicates that the HAM-A in Indonesian version has satisfactory psychometric properties with adequate validity and reliability, so that it can be used to measure work-related stress on nurses.

Similar to this study, translation of HAM-A into another language version has been done several times and getting valid and reliable results. In clinical research settings, HAM-A is a reliable and valid measure for the assessment of global anxiety in the adolescent population (Clark & Donovan, 1994); HAM-A are reliable and valid instruments that can be used among end-stage renal disease (ESRD) patients undergoing hemodialysis (HD) (Gencoz, Gencoz, & Soykan, 2007); HAM-A is a valid and reliable instrument for the assessment of depression in the Urdu language (Hashmi, Naz, Asif, & Khawaja, 2016); In Indian language with video recorded interview, HAM-A inter-rater reliability has found excellent to asses patients with major depressive disorder (MDD) (Prasad et al., 2009).

In general/workers setting, this study supports the results of previous studies, among others: HARS in the Arabic version is valid and reliable to measure work-related stress among working women in Gaza Strip (Aqel & Thabet, 2017), the HAM-A showed good internal consistency to assess the Romanian employees working in non-governmental organizations (Craiovan, 2015), HAM-A can be used globally and is valid and reliable to measure work-related stress on students (Gupta et al., 2014), HAM-A has a high-reliability index to measure anxiety oncology nursing in Athens, Greece (Karanikola et al., 2016) and the HARS in Greek language was reliable to assess work-related stress in emergency nursing

personnel in Greece (Stathopoulou, Karanikola, Panagiotopoulou, & Papathanassoglou, 2011).

CONCLUSION

The result of the study demonstrates that the Indonesian version of the HAM-A fulfils the criteria of a reliable (fair acceptable criteria) and valid (good criteria) assessment tool to assess the work-related stress in the nursing profession. This scale showed good psychometric properties in the nursing profession with different education, gender, work experience, and different department. The high internal consistency and construct validity support the application of the HAM-A as an easy-administered tool to asses work-related stress in the nursing profession.

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Original Research

Factors Influencing Mothers' Intention to Immunize Children Younger than Five Years of Age in West Borneo: a Cross-Sectional Study**Setho Hadisuyatmana¹, Ilya Krisnana¹, Muhammad Adil Sipahutar²**¹ Faculty of Nursing, Universitas Airlangga, East Java, Indonesia² Health Office of Pontianak**ABSTRACT**

Introduction: Immunisations for BCG, DTP, Poliomyelitis, Hepatitis, and MMR are compulsory for children under 5 years old in Indonesia and government-provided free services. However, the available records indicated that adherence to the program remains a challenge. This study aimed to investigate factors associated with mothers' intention to comply with the immunization program, particularly among those who had children of younger than one year old.

Methods: The study was conducted through a cross-sectional analysis. Forty-six mothers self-registered them selves as participants of this study. The data were collected through check-listed interviews, to investigate the correlations between social factors, information factors, attitude toward behaviour, subjective norm, perceived behavioural control, and intention to adhere to the compulsory immunization program. The data were then analysed using logistic regression and spearman rank test with significance level of $\alpha=0.05$.

Results: Mothers' attitude, subjective norm, perceived behavioral control, and knowledge have significant correlations with the intention in completing the immunisation program for their children (respectively $p = 0.009$; 0.014 ; 0.025 ; 0.038). Their intention positively correlated with adherence to complete the program ($p=0,002$). However, other factors studied did not correlate either with mothers' intention to adherence to the program.

Conclusion: This study suggests that mothers' intention is influenced by family members suggestions, indicating that their capacity in decision making was limited and relying to other member. Further investigation is required to unveil the underlying reasons of being non-adherence.

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INTRODUCTION

Immunisations for BCG, DTP, Poliomyelitis, Hepatitis, and MMR are compulsory in Indonesia to protect children younger than 5 years old from contracting the diseases (Kemenkes RI 2016). This program is provided as a free-paid service in public hospitals and public health centers (known as Puskesmas). Otherwise, mothers have to access it under an out-of-pocket service in private practitioners. The success of a 100% compliance is expected to prevent outbreaks and premature deaths among the children (Destiyanta et al. 2015). The government of Indonesia has set a target of 100% immunization rate as the success indicator. Nevertheless, only 82.30% of the

targeted children complied the program (Kemenkes RI 2016). This indicates that the program was yet successful.

The available literature admitted that adherence to immunization remains a challenging issue all over the world. Like in the United States of America, parental religious perspective had pushed 17 states to allow a philosophical exemption towards compulsory immunization program (Womack, 2010). Another issues raised in low and middle income countries (LMICs) such as in India and Lao (Phimmasane et al., 2010, Masand et al., 2012). These studies reason the parental knowledge around the necessity of immunization and their low social-economic capacity as major hindrance to the non-compliance behaviour.

The World Health Organization (WHO 2015) supported that the similar cases in 2014 had caused over 11.3 million children who lived in LMICs unable to access health services for vaccination. The WHO asserts that the situation is responsible for more than two million of premature deaths in these countries. Therefore, the organization (2015) prioritizes 100% coverage of immunization program in LMICs, including Indonesia. However, it was reported that more than 32.1% of children in Indonesia failed complete the compulsory program, and more than 13.5% others were never immunized (Kementerian Kesehatan Republik Indonesia 2013).

Particularly in Pontianak, the capital city of West Borneo, there were more than 27.58% of the babies did not comply to the immunization program during 2015 (Dinkes Kota Pontianak 2016). The Puskesmas of Siantan Tengah, one of the public health centers in the city, reported that there were only 50.2% of the babies accessed to get the immunization. This reasoned the outbreaks of diphtheria, neonatal tetanus, Measles, and Hepatitis B. Local investigation informed that none of these children complied with the program (Dinkes Kota Pontianak 2016). On the other hand, it is reported that a mother's lack-of-awareness toward health significantly contributed to the situation (Satgas IDAI 2011). Adekeye et al. (2015), Barkun (2012), Febriastuti et al. (2014) and Rizani et al. (2009) agreed that this could also be influenced by mothers' personal attitude and past experience about immunization. Harmasdiyani (2015) added that family support, level of education, and the accessibility of health service also determined the compliance toward the program.

Ajzen's Planned Behaviour Theory (2005) offers a way to further understand this phenomenon. It explains that intention, attitude or valuation, and perceptions on social norm could affect one's behavior. Particular to the studied phenomenon, this theory lends a light to explain the underlying factors (Uddin et al. 2012). The behavior belief refers to an individual's notion toward the results of acts (belief strength) and its evaluation (outcome evaluation). The normative belief refers to expectations toward other's expectation, and a personal motivation to fulfill the expectations, while control belief addresses the accessibility of supports against attempts to bring out the intention into action (Nursalam 2013). This study aimed to examine factors that influenced mothers' intention to immunize their children of younger than one year old.

MATERIALS AND METHODS

Research Design

This study targeted at 178 mothers of babies aged ranging from 9 to 12 months old in the work area of a public health center (Puskesmas) in Pontianak, West Borneo, as population. We selected the sample purposively following inclusion criteria: have at least one child who were currently aged between 9-12

months old, registered in the monthly screening cohort, literate, and have the mother and child health manual book that were government-provided. We approached targeted mothers when they were coming for a routine check for their babies, provided information regarding the study, and offer them written consents upon their agreement. Mothers who were registered as regular clients of the Puskesmas and owned a mother and child health manual book, were offered as participants in this study.

This study was conducted under the light of cross-sectional approach, where by we examined the correlations between participants social factors (age, gender, education, ethnicity, income, and religious belief), information (experience, knowledge, and media exposure), attitude, subjective norm, and perceived behavior control and their intention and the adherence to immunization program. The predictors were investigated using a questionnaire adapted from Ajzen's (2006) Planned Behavior questionnaire that has been translated and validated in Jerman, Amerika, Italia, Uganda, China (Adekeye et al. 2015). We use the Bahasa Indonesia version developed by and tested for validity and reliability by Febriastuti, Arif, & Kusumaningrum (2014). The questionnaire used in this study was originally designed to collect non-continuous data. Participants' intention and the adherence to immunization program were identified using the national-standardized mother and child health manual book. A verbal permission was granted from Kusumaningrum (Febriastuti, Arif, & Kusumaningrum 2014) through a phonecall. The validity and reliability issues of questionnaires used in this study have been evaluated by the original authors. The validity test used r table = 0.561 using the significance level of 95% resulted the score of 0.816-0.915 for all the questions. The reliability of the questionnaire was tested using Cronbach's alpha resulted the score of 0.975.

Data Collection and Analysis

We collected the data between October-December 2016, at one of the Puskesmas in the region of Siantan Tengah, the province of West Kalimantan. The questionnaire was distributed to participating mothers, following written consent. Each mother was given time to look the given questionnaires and provided assistance if required to guide in filling up the questions. The data collection process was conducted after the mothers finished meeting with the doctor. We provided chairs and table and utensils for mothers to fill questionnaire sheet. Souvenirs equal to 100.000 Indonesian Rupiah were distributed after the data collection process or for those who decided not to continue their participations. The collected data were then cleaned and analysed using univariate, bivariate, and multivariate modes of analysis Spearman Rank's Test using the significant level of $\alpha < 0.05$. A logistic regression was employed to examine the interrelationship of multiple independent variables (social, information, attitude,

subjective norm, and perceived behavior factors) and mothers' intention to adhere to the immunization program. These multivariate analyses were tested using the significant level of $\alpha < 0.05$.

Ethical Consideration

The Universitas Airlangga's Human-Health Research Ethical Committee has approved this study under the article number 267-KEPK.

RESULTS

Demographic Details

A total of 46 mothers were voluntarily participating in this study. Most of the participating mothers were younger than 21 years old (50%) and graduated from primary school (39.1%), indicating that they might lacked education. They were mostly lived in poorly financial-support (71.7%) and coming from Madura as cultural background (54.3%) (see Table 1). Most participants relied on the Puskesmas as the main source of information in relate with the immunization program (93.5%), while the electronic-based and printed media were less likely accessed. The majority of the participants (54.3%) have sufficient knowledge about the necessity of the compulsory immunizations for their children (see Table 2).

Attitude, Subjective Norm, and Perceived Behavioural Control toward Immunization Program

In regard to attitude, more than half of participants (56.5%) refused to follow the program, and about 43.5% of the others were being supportive. In term of their subjective norm, 56.5% of participants ignored the supports from their immediate family, friends, and health personnel. The majority of participants (63%) have poor perception toward the immunization program, only about 28.3% of mothers viewed the program positively. Most mothers (60.9%) have low intention to follow the immunization program. Respectively, most children younger than five years of age (56.5%) failed to comply with the compulsory immunization program (see Table 3).

The Interrelationship of Age, Education Background, Household Income, Religious View, Ethnic, Past Experience, Media Exposure, and Intention to Adhere the Compulsory Immunization Program

The findings in this study show that age, the highest level of education, family income, religious view, ethnical background, personal past experience, and media exposure have no correlation with participants' intention to adhere to the program despite the odds ratio inform significant figures (OR < 0.05) (see Table 4).

The Interrelationship between Knowledge, Personal Belief and Family Support, Awareness, and Intention Adhere to the Compulsory Immunization Program

This study suggests that mothers who acquired sufficient understandings about the significance of immunization have higher intention to access Puskesmas on behalf of their children ($p=0.038$) when compared with their counterparts (see table 5). The odd ratio of this variable indicates that acquired knowledge on immunization would improve the probability of mothers being adhered to the program by 3.127 times higher.

The regression analysis suggests that mothers' attitude toward immunization has a significant interrelation with their intention to follow the program ($p=0.009$) The odd ratio of this correlation indicates that mothers' belief toward the result of immunization contributes as many as 8.037 times higher to influence their adherence to the immunization program (see table 5). Likewise, supports from immediate families including husbands and parents (subjective norm) also strengthen participants' intention to immunize their children (logistic regression test of $p = 0.014$, with its odd ratio of 5.056).

Additionally, all of the aforementioned factors also determine mothers' awareness toward the importance of immunizations for their children. As the regression test shows that the awareness (perceived behaviour control) has a close interrelationship with mothers' intention to adhere to the immunization program ($p = 0.025$, OR = 0.445).

The analisis of the results suggest that mothers' intention correlates with childrens' completion in following the compulsory immunization provided by the Indonesian government. The spearman rank test (p of 0.002) infers that the higher the mother intention the higher possibility of children's compliance to the immunization program.

DISCUSSION

The findings in this study showed that the majority of the participants gave birth at a young age with low level of education, and half of the children were not completely immunized. This study also finds a strong and positive correlation between mothers' level of understanding and intention to comply the children's compulsory immunization program. Ajzen (2005) lends a support to this finding and reasons the low participation in the compulsory immunization program as a result from mothers' insufficient knowledge. This leads to a notion that the low understanding and awareness among mothers determines the low adherence, as well as negative perception towards the program (Gustin, 2012). This indicates that participants' poor perception and rejection to adhere with the program were most likely as a result from their unfamiliarity on the importance of immunization for their children. However, the current study argues that there is no significant

correlation between mothers' age, level of formal education, and intention to comply with the program. Also, this rejects prior finding by (Kusnanto et al., 2017), whereby the authors underscored the highest level of formal education as a determinant in baby's immunization status. Instead, this study implies that mothers' knowledge on children's immunization was not determined by their young age and low level of formal education. Rather, they may be non-formally exposed by different source of information, which is yet explored in this study. The positive and strong correlation between attitude and intention shown in this study indicate that good understanding is fundamental for mothers whose children need to be immunized.

Another finding in this study infers the local public health centre (Puskesmas) is viewed as the most reliable and accessible source of information regarding the immunization program. The participants heavily relied to the Puskesmas to gain important updates regarding the program. Participants who acquired sufficient understandings about the significance of immunization have higher intention to access the Puskesmas when compared with their counterparts. This finding underscores the role of Puskesmas in promoting immunization program to mothers (Mulyanti, 2014). However, this did not guarantee that they would comply with the program, despite the finding suggest that mothers' awareness has a strong correlation with their intention to adhere to the program.

The finding indicates that most participants could only access Puskesmas for an immunization provider due to their low economic background. Most participants lived under the insufficient household income, lower than the regional minimum wage of US\$ 150 per month (Sulistiawati, 2013). Thus, it is unlikely that they would spend out-of-pocket money to get the immunization from private health practices. This suggests that being absence in a Puskesmas-scheduled immunization was a non-adhere behavior (Puspitaningrum 2015), otherwise program's misinformation or other possible causes that have not been explored under this study. This finding suggests further investigation on the underlying reasons of being non-adherence, given the free services by local Puskesmas and mothers good knowledge around children immunization.

The strong correlation between family supports and intention found in this study implies that mothers' intention to immunize children is strongly influenced by supports given by families (including husbands, parents, or peer). In further analysis, positive correlation is found between mothers' intention and children compliance to immunization program. This raises the significant role of family members as determinant for children's immunization status and rate improvement. This study informs that there is a tendency among participants to have higher intention in following the program, with regard to the positive supports given by family members, including parents and siblings and husbands. This finding lends

a support to earlier studies by Ismet (2013) and Sarimin, Ismanto & Worang (2014), whereby the authors underscored the necessary of supports from immediate parents and siblings. This finding further suggests the necessity to involve family members as a strategy to improve children immunization rate. This indicates that mothers' intention is more a result of cumulative thought than sole decision.

However, one study showed that women's inferiority in family decision-making significantly contributes to the non-compliance behaviour in regards to children immunization program (Afriani et al., 2014) that lead to failure in completing the compulsory immunizations (Puspitaningrum 2015). This can be another reason to the non-adhere behaviour among mothers and low rate of immunization. However, this remains unclear and requires future studies in attempt to unveil the best strategy in improving children immunization rate.

CONCLUSION

This study finds that mothers' age, education background, ethnics and religion, and perspective did not play roles to children immunization rate. Rather, there is an indication that mothers were unable to comply by themselves due to the interplay in family decision-making. Therefore, it is suggested that family members within or those influencing the household need to be involved in health promotions, particularly to improve the immunization rate. However, these results can only be generalized to mothers lived in the area of Siantan Tengah, one region in the province of West Kalimantan.

The limitations of this study are around the questionnaire details and the number of mothers as participants. The age of participants when first become a mother was not asked; this raised a loose argument to imply that the participants were novice to the immunization program. Secondly, the small number of participants in this study informs that the finding should be generalized with considerate manner. This study, however, adds new evidence and suggests a further study to involved families in investigating their roles to children immunization rate and uptake.

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Original Research

Leader Empowering Behaviors and Psychological Empowerment as Perceived by Young Hospital Staff Nurses: A Pilot Study**Ryan Michael Flores Oducado**

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ABSTRACT

Introduction: Empowerment has become an important concept in nursing that has gained acknowledgment in theories and practice of leadership and management. A positive organization espouses empowerment to attract and retain employees. While it is not new to nursing, there is little published research on empowerment among nurses in the Philippines. This study aimed to measure young staff nurses' perception of leader empowering behaviors and psychological empowerment.

Methods: This study used a cross-sectional survey design participated by 44 conveniently chosen staff nurses in a private teaching and training hospital in Iloilo City, Philippines. The participants were asked to answer 5-point Likert scale questions utilizing adopted instruments. Descriptive and non-parametric statistical stools were used with Mann-Whitney U test to determine differences and Spearman's rank correlation to establish relationship between variables.

Results: Overall, young staff nurses perceived their leaders' behaviors to be highly empowering ($M=3.89$). Staff nurses also had a high level of psychological empowerment ($M=4.07$). Leader empowering behaviors was significantly related to staff nurses' perception of psychological empowerment ($p=.001$). Staff nurses' level of psychological empowerment were significantly different in terms of employment status ($p=.020$) and years of work experience ($p=.014$).

Conclusion: This study highlights the positive influence of the empowering behaviors of leaders in enhancing staff nurses' level of psychological empowerment. It is vital for nurse managers to continually demonstrate leadership behaviors that empower staff nurses at the unit level.

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INTRODUCTION

Empowerment has become a focal concept in nursing. Nursing empowerment is regarded as essential in ensuring professional success and in developing the professional image of nurses (Lockhart, 2017). Historically, nurses were viewed as submissive and dependent on the patriarchal medical hierarchy having little involvement in decisions affecting their practice standards (Okuyama, Wagner, & Bijnen, 2014; Lockhart, 2017). However, the nursing profession has changed over the past decades. Today's healthcare environment calls for a more empowered nursing profession. In a multidisciplinary healthcare setting, even staff nurses are now encouraged to get involved in clinical and organizational decision-making processes (Van

Bogaert, Peremans, de Wit, Van Heusden, Franck, Timmermans, & Havens, 2015). With the growing demands in the nurse manager's role in today's healthcare environment, the manager's ability to engage in empowering leadership behavior becomes a challenge (Greco, Laschinger, & Wong, 2006; Lee & Kim, 2013).

The nursing literature flourishes with studies on empowerment indicating that nursing empowerment is associated with less burnout, higher workplace satisfaction, commitment, increased autonomy, positive work behaviors and environment, better performance and patient health outcomes (Greco, Laschinger, & Wong, 2006; Laschinger, Gilbert, Smith & Leslie, 2010; Leggat, Bartram, Casimir & Stanton, 2010; Jordan & Davis 2013; Oyeleye, Hanson,

O'Connor & Dunn, 2013; Asiri, Rohrer, Al-Surimi, Da'ar, & Ahmed, 2016; Goedhart, van Oostveen, & Vermeulen, 2017). Empowered nurses are more likely to subscribe to more positive work practices resulting in positive patient outcomes (Donahue, Piazza, Griffin, Dykes & Fitzpatrick, 2008). Correspondingly, the empowerment of nurses appears essential in the delivery of high-quality patient care (Goedhart, van Oostveen, & Vermeulen, 2017). On the other hand, disempowered or powerless nurses are ineffective, unproductive and dissatisfied nurses (Manojlovich, 2007; Lee & Kim, 2013; Mariano, Javier, Fauni, & De Vera, 2014). In other words, powerless nurses are less likely to deliver the best possible care for their patients.

Despite the numerous positive benefits of empowerment, surveys reveal that nurses are still not sufficiently empowered. For instance, only a moderate level of empowerment was disclosed among staff nurses in the Philippines (Mariano, Javier, Fauni, & De Vera, 2014) and Canada (Greco, Laschinger, & Wong, 2006). Even among the nurse managers cohort in the United States, many were not fully empowered (Regan & Rodriguez, 2011; Oliver, Gallo, Griffin, White, & Fitzpatrick, 2014). This is critical because a leader must be empowered so that they can empower others (Regan & Rodriguez, 2011). The nurse leader's empowering behaviors can be pivotal on how nurses perceive and respond to their work environment (Greco, Laschinger, & Wong, 2006).

In this sense, nurse supervisors and managers have an essential role in empowering staff (Regan & Rodriguez, 2011). Empowering staff is a vital nursing leadership function to cultivate a culture of productive work environment that encourages and sustains quality and safe patient care (Kramer, Schmalenberg & Maguire, 2010; Asiri, Rohrer, Al-Surimi, Da'ar, & Ahmed, 2016). Nevertheless, nurses may feel powerless relative to organizational administrators and medical staff (Manojlovich, 2007). As empowerment of staff nurses can emerge from nursing leadership (Wilson and Laschinger, 1994), it is necessary to assess leadership behaviors that promote empowerment among staff. According to Kanter's (1993) theory of structural empowerment, opportunity, and power in organizations are essential to empowerment that contributes to getting the work done. Kanter (1993) described access to information, resources, support, and having a chance for advancement or opportunity to be involved in activities beyond one's job description as the main components of structural empowerment. Although not explicitly mentioned, the essence of structural empowerment or behaviors that lead an individual to act in an empowered manner has also been linked with nursing leadership, participative management and staff involvement in decision making (Kramer & Schmalenberg, 1993; Upenieks, 2003; Linnen & Rowley, 2014). This proposes that leadership behaviors can be sources of power in the work setting that enable staff to act or feel empowered. Given the

ability of managers to affect the job responsibilities of their workforce, managers are likely to influence the task perceptions of their staff (Konczak, Stelly, & Trusty, 2000). Konczak, Stelly, & Trusty (2000) identified six dimensions of leader empowering behaviors: delegation of authority, accountability, self-directed decision-making, information sharing, skills development, and coaching for innovative performance. The leader's ability to exhibit and showcase these empowering actions will have an impact on the way staff will perceive the tasks given to them by their leader (Mendes & Stander, 2011).

Meanwhile, empowerment also being both a process and an outcome must be facilitated (Kettunen, Poskiparta, & Liimatainen (2001). With the call for a multidisciplinary approach in healthcare, nurse managers must acquire leadership competencies that can generate an empowered workplace (Asiri, Rohrer, Al-Surimi, Da'ar, & Ahmed, 2016). Having the necessary structures that promote empowerment, such as empowering leader behaviors, may result in a psychologically empowering experience among staff. Conger and Kanungo (1988) and furthered by Spreitzer (1995) viewed empowerment as an enabling process implying motivation through enhancing personal efficacy manifesting as a set of four cognitions: meaning, competence, self-determination, and impact, that are shaped by a work environment. Conger and Kanungo (1988) also characterized empowerment as a process that involves a manager sharing power with subordinates.

While empowerment is not a new concept to nursing, limited published studies are available regarding the topic of nurses' empowerment in the local setting. Moreover, with the current nurse staffing challenges experienced by hospital organizations, fostering elements of a positive organization (Mendes & Stander, 2011), in this case an empowered workplace, is needed if hospitals want to attract and retain their staff nurses (Bester, Stander, & van Zyl, 2015). The role of leadership is a dynamic one between the leader and followers (Peachey, 2002). Continuous assessment of nurses' empowerment levels at every stage of their nursing career is henceforth essential (Al-Dweik, Al-Daken, Abu-Snieneh, & Ahmad, 2016). This study is an attempt to investigate the young staff nurses' perceptions of leader empowering behaviors and psychological empowerment within the Philippine context and whether there is a significant relationship between the two major variables.

MATERIALS AND METHODS

This study employed a descriptive, cross-sectional research survey design. The study was conducted in a private tertiary hospital categorized as training and teaching hospital in Iloilo City, Philippines. In coordination with the Nursing Service Office of the hospital, administrative and ethical clearances were sought before the actual survey. Data were gathered

during the monthly In-service training activity of the Nursing Service Office. Those who attended the activity, available, and willing to participate during the conduct of the survey were included in the study. Forty-four (44) conveniently chosen young staff nurses, with age ranging from 21 to 38 years old with an average age of 27 (Median = 28), consented and participated in the study. All staff nurses were with Bachelor's degree, with a mean year of work experience equal to 2.9 (Median = 1.5) ranging from less than one year to 12 years. Informed consent was secured prior to the administration of questionnaires. The participants were ensured of their voluntary participation, including their rights to anonymity and confidentiality. A sealed envelope containing the self-administered questionnaires and a demographic and work-related profile sheet was distributed to the participants. Participants were asked to return the sealed envelope without any identifiable information.

Data for this study were gathered using two adopted research instruments that have been found valid in healthcare: Spreitzer's (1995) Psychological Empowerment Scale and Konczak, Stelly & Trusty's (2003) Leader Empowering Behavior Questionnaire. The Psychological Empowerment Scale is a 12-item scale with four dimensions: meaning, competence, self-determination, and impact having three items measuring each dimension. According to Spreitzer's (1995), these subscales combined create psychological empowerment.

The Leader Empowering Behavior Questionnaire is a 19-item scale, consisting of six subscales: delegation of authority, accountability, self-directed decision-making, information sharing, skill development, and coaching for innovative performance. Each dimension has three items except for information sharing having four items. The original instrument consisted of 17 items, but two items on information sharing were added by Bester, Stander, & van Zyl (2015).

All items of both instruments were answerable using a 5-point Likert-type scale (1=strongly disagree, 5=strongly agree). Higher scores indicate a higher level of empowerment. Moreover, authors of both scales disclosed an acceptable reliability level ($\alpha > .70$). Permission to adopt the scales were secured from authors prior to use.

Descriptive statistics (frequency, percentage, mean, median, mean rank, rank) were utilized in describing the demographic and work-related profile of the participants. Means were employed to determine the level of empowerment. Scale items were summed and averaged to yield scores ranging from 1 to 5 wherein 1.00 – 2.33 was considered low, 2.34 – 3.66 was moderate, and 3.67 – 5.00 was high level. Mann-Whitney U test was performed to test for differences while Spearman rho tested for the correlation between leader empowering behaviors and psychological empowerment. The result was significant if alpha was less than .05. The data were computed with the aid of SPSS version 23.

RESULTS

Table 1 shows that majority of nurses were female (68.2%), single (86.6%), with permanent status of employment (68.2%), with more than one year of work experience in the hospital setting (68.2%) and were assigned in Medical and Surgical Units (68.2%).

Table 2 shows that overall, staff nurses perceive their leaders' behaviors to be highly empowering ($M=3.89$; $SD=.43$). Among the six (6) subscales, ensuring accountability ($M=4.05$, Rank 1), skills development ($M=4.03$, Rank 2), information sharing ($M=3.95$, Rank 3) were the most used empowering leadership behaviors. These were followed by decision-making ($M=3.80$, Rank 4) and delegation ($M=3.77$, Rank 5) and coaching for innovative performance ($M=3.69$, Rank 6).

It can also be gleaned in Table 2 that staff nurses generally had high perceptions of psychological empowerment ($M=4.07$; $SD=.44$). Meaning ($M=4.36$, Rank 1) had the highest mean score among the subscales followed by competence ($M=4.07$, Rank 2), self-determination ($M=4.01$, Rank 3) with impact ($M=3.83$, Rank 4) having the lowest mean score.

Statistical analysis using Spearman rho correlation revealed a significant positive relationship ($r=.472$; $p=.001$) between staff nurses' perception of leader empowering behaviors and psychological empowerment.

Table 3 shows that leader empowering behaviors did not vary significantly according to sex ($p=.350$), employment status ($p=.919$), marital status ($p=.394$); years of work experience (.622), and area of work assignment (.061). Likewise, there were no significant differences in the staff nurses' perception of psychological empowerment classified as to sex ($p=.899$); marital status ($p=.481$); area of assignment ($p=.098$). There were, however significant differences in the psychological empowerment of staff nurses when grouped according to employment status ($p=.020$) and years of experience ($p=.014$). Staff nurses with permanent employment status (Mean rank = 25.57) had a significantly higher level of psychological empowerment over those with

Table 1. Demographic and work-related profile of staff nurses

Variables	n	%
Sex		
Male	14	31.8
Female	30	68.2
Marital status		
Single	39	86.6
Married	5	11.4
Employment status		
Permanent	30	68.2
Contractual	14	31.8
Years of work experience		
1 year or less	14	31.8
More than 1 year	30	68.2
Area of assignment		
Medical-Surgical Units	30	68.2
Specialty Units (ER, ICU, DR)	14	31.8

Table 2. Level of leader empowering behaviors and psychological empowerment and relationship between variables

Variables	Mean	SD	Interpretation	Rank
Leader Empowering Behaviors (Overall)	3.89	0.43	High	
Accountability	4.05	0.57	High	1
Skills Development	4.03	0.55	High	2
Information Sharing	3.95	0.53	High	3
Decision-making	3.80	0.54	High	4
Delegation	3.77	0.56	High	5
Coaching for Innovative Performance	3.69	0.64	High	6
Psychological Empowerment (Overall)	4.07	0.44	High	
Meaning	4.36	0.61	High	1
Competence	4.07	0.52	High	2
Self-determination	4.01	0.51	High	3
Impact	3.83	0.55	High	4
Spearman $r = .472$		$p\text{-value} = .001$		

Table 3. Differences in leader empowering behaviors and psychological empowerment

Variables	Leader Empowering Behaviors p-value	Psychological Empowerment p-value
Sex	0.350	0.899
Employment status	0.919	0.020
Marital status	0.394	0.481
Years of experience	0.622	0.014
Area of assignment	0.061	0.098

contractual employment status (Mean rank = 15.93). Also, staff nurses with more than 1 year of work experience in the hospital (Mean rank = 26.73) had a significantly higher level of psychological empowerment compared to those with at least one year or less work experience.

DISCUSSION

This study attempted to determine the level of leader empowering behaviors and psychological empowerment among young staff nurses in a private hospital in the Philippines. Nursing scholars view empowerment as either arising from the environment or developing from one's psychological state (Manojlovich, 2007). In this study, leadership behaviors exhibiting empowerment were considered a structure within the environment wherein these leader empowering behaviors serve as the basis of power or source of the sense of being empowered. On the other hand, psychological empowerment is the intrinsic or personal factor of one's sense of empowerment. Empowerment is viewed as a process by which a leader enables staff members to act (Ibrahim, Abo El-Magd, & Sayed, 2014). Laschinger, Gilbert, Smith, and Leslie (2010) emphasized the role of nurse managers in providing conditions or appropriate structures to enable staff nurses to perform effectively within their work environments, thereby contributing to the achievement of goals of the organization. This study supports Kanter's (1993) theoretical propositions that when leaders are effective in using empowering behaviors, staff nurses feel empowered to take on the tasks in their workplace. Kanter (1993) argued that organizational structures within the workplace are a precursor in shaping the work experiences of staff members.

Consistent with prior studies, leader empowering behaviors was significantly related to staff nurses' psychological empowerment. This means that the higher is the nurse leader's empowering behaviors, the higher is the level of psychological empowerment experienced by staff nurses. In other words, staff nurses who believe that their nurse managers are providing them with the necessary information to get their work done, involving them in decision-making affecting their practice, sharing with them unit governance, developing their skills continually and making them accountable for their practice, are more likely than those who do not believe in their manager's abilities, to come together to as a high functioning team in the workplace. Konczak, Stelly & Trusty's (2003) disclosed that psychological empowerment was significantly related to leader empowering behaviors and was found to mediate between two outcome variables: job satisfaction and organizational commitment. Similarly, Peachey (2002) also found a significant correlation between leader empowering behaviors and psychological empowerment in a study conducted in Canada. A similar result was obtained in an Asian country where nurse managers' leadership behaviors were directly related to psychological empowerment among nurses working in acute care hospitals in Japan (Kanai-Pak, 2009). Staff nurses' perceptions of empowerment in their work setting are magnified by their leaders' empowering behaviors. In this study, nurse managers' leadership behaviors were essential for staff nurses to feel supported and empowered (Greco, Laschinger, & Wong, 2006).

This study also demonstrated a high level of leader empowering behaviors as perceived by young staff nurses. While all empowering behaviors of leaders in this study were rated high, the dimensions of decision-making, delegation, and coaching for

innovative performance fell below the composite mean. In contrast, researchers in Canada revealed that staff nurses perceived their leaders' behaviors to be only somewhat empowering (Greco, Laschinger, & Wong, 2006). Nurses in the study of Peachey (2002) also perceived their leaders were exhibiting low to moderate empowering behaviors. Compared to the two studies conducted abroad, a higher level of leader empowering behaviors was demonstrated in this study. With the appreciation of the positive effects of empowerment in the nursing profession, nurse managers may have started to recognize and showcase empowering leadership behaviors. Although Asiri, Rohrer, Al-Surimi, Da'ar, & Ahmed (2016) found that most nurses in their study believed that their immediate nursing managers were not displaying the ideal level of transformational leadership behaviors wherein empowerment is central, local studies provide support of the empowering leadership style or behaviors among Filipino nurse managers. For example, Lamasan & Oducado (2018) found that Filipino millennial nurse administrators consider their leadership to be empowering. Correspondingly, Filipino nurses in a tertiary hospital in the Philippines agreed that their nurse managers utilized transformational leadership styles (Lapeña, Tuppal, Loo, Abe, 2017). Even in a neighboring Asian country, transformational leadership was said to enhance employee empowerment among nursing staff in Malaysia (Choi, Goh, Adam & Tan, 2016).

This study also found that young staff nurses have a high level of psychological empowerment. This is congruent with the findings of researchers in Egypt (Hashish, All, & Mousa, 2018), revealing nurses with a high level of psychological empowerment. However, in contrast to what was demonstrated in this study, most of the literature suggests that registered nurses' psychological empowerment is only at a moderate level. These studies include nurses in the Philippines (Mariano, Javier, Fauni, & De Vera 2014), Canada (Peachey, 2002), New Zealand (Connolly, Jacobs, & Scott, 2018), Iran (Royan, Alikhani, Mohseni, Alirezaei, Khosravizadeh, & Moosavi, 2017), China (Ouyang, Zhou, & Qu, 2015), Riyadh, Saudi Arabia (Asiri, Rohrer, Al-Surimi, Da'ar, & Ahmed, 2016) and even also in Egypt (Ibrahim, Abo El-Magd, & Sayed, 2014). It is still noteworthy that nurses' psychological empowerment was relatively moderate to high level.

As to each subscale, the result of this study is similar to findings reported in prior studies conducted elsewhere, wherein meaning had the highest and impact had the lowest mean score among the four dimensions. The meaning dimension was reported to have the highest mean in earlier researches (Peachey, 2002; Lee, 2012; Mariano, Javier, Fauni, & De Vera, 2014; Asiri, Rohrer, Al-Surimi, Da'ar, & Ahmed, 2016). The meaning dimension is the value of a work goal or purpose, judged in relation to an individual's ideals or standards (Thomas & Velthouse, 1990). The result of the study indicates that leader empowering behaviors

influence staff nurses' perception of the value that they put in their job. Moreover, the result may indicate that staff nurses form a satisfying connection with their job (Mariano, Javier, Fauni, & De Vera, 2014).

On the other hand, the impact dimension was consistently noted to have the lowest mean score among the four aspects of psychological empowerment (Peachey, 2002; Lee, 2012; Asiri, Rohrer, Al-Surimi, Da'ar, & Ahmed, 2016, Hashish, All, & Mousa, 2018). The dimension of impact refers to the degree to which an individual can influence strategic, administrative, or operating outcomes at work (Thomas & Velthouse, 1990). While this was found to be high, staff nurses may still have hesitations over the degree of control or impact they have on certain strategic, administrative, and operating outcomes of their work attributed to their level in the organization. Younger staff nurses have less degree of official power and influence within the hierarchal structure of the organization. For instance, staff nurses were not highly involved in decision making when unit managers made resolutions in the areas of professional practice governance and leadership, support staff practice, and recruitment (Gatbonton, 2019). Though there are varying mean scores in the four dimensions of psychological empowerment, Sprietzer (1995) maintains that the interplay of these components produces an overall feeling of being psychologically empowered.

It is also significant to note that in this study, variation in staff nurses' perception of psychological empowerment was noted according to employment status. Staff nurses with permanent status in their workplace may feel more psychologically empowered compared to those whose employment status is not permanent. Insecurity in one's job can exist when nurses experience uncertainty or danger of job loss (Hashish, All, & Mousa, 2018). Employment status was found to be a good predictor of employment security among nurses in the Philippines (Egcas, 2017). Having a permanent work employment status may give staff nurses a sense of security. It was earlier studied that psychological empowerment was negatively correlated with job insecurity (Hashish, All, & Mousa, 2018).

Also, this study discovered that years of work experience was significantly related to psychological empowerment. This suggests that staff nurses having longer years of working in the hospital may have better access to empowering structures within the hospital work setting. Nurses may have learned to navigate themselves at assessing empowerment structures to accomplish their work goals over time (Peachey, 2002). In China, nurses' psychological empowerment was found to be significantly different in terms of age and length of service (Ouyang, Zhou, & Qu, 2015). Contrastingly, findings in Egypt disclosed no relationship between years of experience and psychological empowerment (Ibrahim, Abo El-Magd, & Sayed, 2014).

While there was a small sample size, this study provides additional evidence of nurses' empowerment and addresses the dearth of scientific knowledge on empowerment in the Philippine setting. Also, this study contributes to the literature regarding the positive effects of empowerment among staff nurses by having empowering leaders. Despite its input to the body of knowledge, this study has its limitations opening doors for future inquiry. The small sample size limited the generalization of findings hence, conclusions are considered preliminary. The use of self-administered questionnaires in data collection constrained findings to the danger of self-report bias. The researcher recommends the need for further study to address methodological issues experienced in this study. Studies involving larger samples may be conducted in the future to validate the findings of the present investigation.

CONCLUSION

Empowerment has gained recognition and acceptance among nurses both in the nursing leader and staff role. In this study, leader empowering behaviors is significantly related to psychological empowerment. Young staff nurses perceived the behaviors of their leaders as highly empowering, enabling them to feel highly empowered. Nursing leaders play a substantial part in creating positive work environments influencing how staff nurses respond to their work. When nurse managers give staff nurses the opportunity to take more responsibility, provide access to relevant information to get their job done, delegate tasks, develop their skills to enhance staff performance, and when decision making is shared in the hands of those who practice at the bedside, positive outcome among staff is likely realized. The empowering actions of the leader build staff nurses' confidence that permits them to act autonomously. Likewise, these empowering practices increase staff nurses' chance of finding meaning and impact in their work. Nurse managers and leaders should continuously develop strategies that enhance staff nurses' perceptions of feeling empowered. They should foster the elements of a positive organization to ensure empowering conditions at work. Besides, cultivating empowerment in the nursing profession is vital and imperative.

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Original Research

Caring Efficacy and Nurse Caring Behavior in Taking Care of Critical Patients

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ABSTRACT

Introduction: Critical patients have different needs compared to patients in other general inpatient wards, so they need extra treatments from a nurse. Nurse caring behavior given through an approach in which nurses work by improving their concern to patients. However, it is influenced by caring efficacy in which a nurse is confident to express his or her caring to patients. The aims of this study were to identify the correlation between caring efficacy with nurse caring behavior in taking care of critical patients at dr. Dradjat Prawiranegara Serang Hospital in Banten Province

Methods: This is a quantitative study with employed a correlation study. The sample size comprised 66 Nurses of ER, ICU and HCU with total sampling technique. The instruments used are CES (Caring Efficacy Scale) to measure caring efficacy and CBA (Caring Behavior Assessment) to measure nurse caring behavior. Descriptive analysis using mean, standard deviation, percentage and frequency distribution. Meanwhile, inferential analysis used Pearson's Correlation.

Results: The univariate analysis results showed the mean \pm DS score of caring behavior is 87.6 ± 10.12 . Meanwhile, the mean \pm DS score of caring efficacy is 86.23 ± 8.74 . Further, inferential analysis revealed a significant ($p < 0.000$) and moderate correlations ($r = 0.448$) between caring efficacy and nurse caring behavior.

Conclusion: Higher of nurse's caring efficacy were followed by higher of nurse's caring behavior in taking care of critical patients. Findings can be used by academic as a prospective nurse and health professionals, to implement a concept of caring efficacy to improve caring behavior. Further research can be a focus on the nursing interventions based on nurses caring behavior to strengthen and increase in taking care of critical patients.

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INTRODUCTION

Nursing service is a form of professional service and an integral part of health service, which is based on science and nursing tips to individuals, families, groups and society either in sick or healthy condition (Ministry of Health the Republic of Indonesia, 2017). Nursing service quality greatly influences health service quality even becomes one of determining factors of the image of health service institution such as hospital. The improvement of nursing quality service is supported by nursing theories development; one of them is caring theory. Nurse caring behavior means giving nursing care service

through a nurse approach of improving care to patients. Nurse attention, empathy, and concern to patients are the keys of nursing care service quality, it is very appropriate with the demand of people who expect a good and quality health service (Putri, 2014).

Watson (2008) explained that caring is a service process which is conducted by health workers especially nurses. A nurse should have caring attitude in order to give a quality nursing care; thus, patients are satisfied with health service given (Kusmiran, 2015). Nevertheless, in reality, just like what have been stated by Putra., Saleh., & Bahar (2014), many nurses have not applied caring behavior yet. And who said that the demand of society who hopes for a good

and quality health service. A lot of research shows that nurse caring behavior in Indonesia is still categorized low. It is previously written by Zees (2012) who obtained that 62% of nurses have low level of caring behavior. The result is also similar to Sukesu's study (2013) that 72.4% of 52 respondents show a low caring behavior.

Critical patients have different needs compared to patients in other general inpatient wards. The patients are described in unstable condition and applied with distress-causing equipment, so they need extra treatments from a nurse. The statement is in line with Jakimowich., & Perry (2015) who said that patients in critical ward has been different from other ward. It can be seen from patients' characteristic difference in critical condition, environment, particular medical equipment, and demand of giving biological, psychological, and social treatments. Patients in critical condition possibly feel frightened, more alone, confused, and anxious. It is supported by the research findings of Lukmanulhakim., & Syukrowardi (2018) who have identified that the majority of critical patients are in an anxious condition as evidenced by have been found 17 or most of respondents (68.0%) in critical treatment wards are within a severe anxiety level, whereas 8 or almost half of respondents (32.0%) are within middle anxiety level. Furthermore, Lukmanulhakim., & Syukrowardi (2018) have also explained that beside physical support, nurses also should have ability of giving emotional, social, and spiritual support. An attitude and behavior which are able to achieve all interventions is caring.

Critical treatment wards are ones of the most challenging, distressed-able condition, and can cause emotional problem relating to anxiety and depression for patients and the family (Rusinova, Kukal, Simek & Cerny, 2014; Lukmanulhakim, Suryani, & Anna, 2016). Besides, the treatment in critical treatment wards is identical with noisy effect, light, and interruption within. Noise is one of factors that cause uncomfortable condition both for patients and for the family. During treatment, the issues of spiritual distress, death, family dysfunction, grief, despair, and many other emotional feelings can emerge as a part of individual coping mechanism of patients, health treatment team members, family, or next of kin. Critical sickness does not only happen from physiological alteration but also from psychosocial process, development, and spirituality. Critical sickness is also a threat for individuals and families. Being parallel to improvement of technology using in health treatment, the accompanying humanization needs become more essential. Humanization needs of health treatment parallels proof-based effective intervention more rather than plunges into tradition (Morton, Fontaine., Hudak., & Gallo, 2011).

Watson's theory (2007), has explained that caring behavior is a manifestation of attention to others, respect for self-esteem and humanity, a commitment to prevent a deterioration, love and bonding, always together, empathy and appreciation. Furthermore,

Potter and Perry (2009) have also explained that caring behavior is an attitude that gives full attention to patients when giving nursing care. Nurse caring behavior aims to give nursing care service through an approach in which nurses work by improving their concern to patients. However, it is influenced by caring efficacy in which a nurse is confident to express his or her caring to patients and this is recognized by efficacy. According to Reid (2012), Caring efficacy is defined as nurse's confidence or ability to behave caring and to build a good relationship with patient. Caring efficacy is one's confidence to express his or her concern to develop relationship with patient and confidence means one's ability and belief to accomplish something in a situation. In addition, it is defined as one's belief to concern with decisions of achievement or development result (Coates, 1997 in Reid, 2012). According to Putra, Saleh, and Bahar (2014), nurses who work with good caring efficacy can get a satisfaction improvement for his or her job. The statement was supported by Reid's study (2011) which showed a positive correlation between nurse's caring efficacy and working satisfaction.

MATERIALS AND METHODS

Study Design

It is a quantitative research with with employed a correlation study. Correlation studies are intended to reveal correlation relationships between variables. Correlation studies refer to the tendency that variations in a variable are followed by variations in other variables. (Nursalam, 2011). This study used a cross-sectional approach. Cross-sectional design is a type of study which intends to learn correlation dynamics between risk factors and the effects through an approach, observation, or data collection at the same time (Notoatmodjo, 2010).

Setting

The data collection was conducted from May to June 2018 at critical treatment wards including Emergency Room (ER), Intensive Care Unit (ICU), High Care Unit (HCU) of dr. Dradjat Prawiranegara Hospital in Serang City, Banten Province. Before conducting the research, the researcher did coordination with related parties, such as head room of ER, ICU, and HCU and nurses practitioner from the third wards. Then, the researcher determined the samples of the study; they are nurses practitioner of the wards. Researcher explained the research purposes, the benefits, the time, the rights of the respondents, the time contract of the research process, and the informed consent. After she got the informed consent, the respondents filled questionnaires of CES (Caring Efficacy Scale) and CBA (Caring Behavior Assessment) which the statements are scored by using Likert scale. Previously, the researcher has tested the validity and the reliability of the statement items. After getting the data from the

questionnaires, the researcher checked it and processed it.

Research Subject

The samples of the research are all nurses practitioner of ER, ICU, and HCU of dr. Dradjat Prawiranegara Serang Hospital, there were 66 nurses practitioner by using with total sampling technique in which the sample size is same as the available population (Sugiyono, 2010).

Instruments

The instrument used for caring efficacy variable is CES (Caring Efficacy Scale) which was developed by Coates (1997) and had been used by Reid (2012). The statements within the questionnaire intends to identify nurses' confidence in their own ability. Then, the questionnaire was modified by the researcher after getting approval from previous researchers to be 26 question items based on the result of literature study relating to nurse's confidence about his or her own ability to perform caring to patients with critical condition by considering mental, psychological, physical, and spiritual aspect and technology or equipment used to take care of a patient. The questionnaire employs Likert scale with 6 choices of answer for positive statements, namely strongly disagree (score 1), disagree (score 2), somewhat disagree (score 3), somewhat agree (score 4), agree (score 5) and strongly agree (score 6). Meanwhile, Likert scale for negative statements are strongly disagree (score 6), disagree (score 5), somewhat disagree (score 4), somewhat agree (score 3), agree (score 2) and strongly agree (score 1). The questionnaire has validity values ranging from 0.497 - 0.779, and reliability test obtained alpha Cronbach of 0.812. Meanwhile, for caring behavior variable, the researcher employed CBA (Caring Behavior Assessment) questionnaire which was developed based on Watson theory by Cronin, & Harrison and had been modified into Indonesian language by Mulyaningsih (2013). Then, the questionnaire was remodified by the researcher after getting approval from previous researchers based on the result of literature study relating to critical patient's needs, such as by considering mental, psychological, physical, and spiritual aspect, including technology or equipment used by patients. It has 34 statement items and uses Likert scale with 4 answer options, namely always (score 4), often (score 3), seldom (score 2) and never (score 1). The validity test which employed 21 respondents obtained ranging form 0.434 - 0.728 and the reliability test obtained alpha Cronbach of 0.899.

Ethical consideration

Ethical consideration was obtained from the Committee of dr. Dradjat Prawiranegara Hospital, Serang for Human Research Subjects with the letter number of 009/TU.1218/V/2018. This is intended to avoid any negative effects for the research since she

did some anticipative steps, namely accomplishing research ethics principles.

Data analysis

Before doing the statistical test analysis, the researcher did normality assumption test of the data taken through the questionnaires by employing normal curve on histogram graph, and also employed skewness score divided by standard error of skewness, in which the score used to determine data normality are from -2 to +2 (Dahlan, 2016). The result of data normality for caring efficacy variable is 1.33 after dividing skewness score with standard error. Meanwhile, the result of nurse caring behavior is -1.46 and the histogram graph of the variable is bell shape. Thus, in conclusion, the tests identified that the data is distributed normally. Descriptive analysis using mean, standard deviation, percentage and frequency distribution. Meanwhile, inferential analysis used Pearson's Correlation (Dahlan, 2016).

RESULTS

Descriptive analysis was done to see the description of characteristics nurses involved in this research. Based on table 1 above, respondents in this study are all nurses those who work from third wards of ER, ICU and HCU. The age range of nurse ranged from 24 to 47 years with an average age of 32.26 years. then also obtained the length of work range of nurses ranged from 3 to 28 years with an average length of work of 7 years. Further based on categorical data, shows most of 65% of 43 respondents are male, and with latest education background is diploma III of nursing 63% of 42 respondents.

Table 2 above, shows In this study, half of the nurses (51.5%) were classified as having high efficacy with the average score of 92.41 ± 8.26 . Similarly, nurses caring behavior in taking care of critical patients was found that the most of nurses (59.0%) belonged to caring with an the average score of 89.69 ± 8.73 .

Table 3 above, showed the results of Pearson's Product Moment correlation analysis showed statistically significant ($p = 0,000$) and moderate correlation ($r = 0.448$) with a positive relationship between caring efficacy and nurse caring behavior in taking care critical patients. In other words, the alternative hypothesis (H_a) is accepted, where higher caring efficacy of a nurse, it will increase of nurse caring behavior in taking care critical patients.

DISCUSSION

Nurse's Caring Efficacy in Taking Care of Critical Patients

Self-efficacy is defined as one's confidence in his or her ability to produce an influential performance on phenomena which influence his or her life.

Table 1. Nurse Characteristics in Taking Care of Critical Patients (n = 66)

Nurse's Characteristics		
The Mean age	32,26 years	
Age range	24 – 47 years	
The Average length of working	7 years	
Length of working range	3 – 28 years	
Nurse's Characteristics	f	%
Sex		
Male	43	65 %
Female	23	35 %
Education		
Diploma	42	63 %
Bachelor	5	8 %
Professional Nurse	19	29 %

Table 2. The Mean of Nurse Caring Efficacy and Nurse Caring Behavior Score in Taking Care of Critical Patients (n = 66)

	Mean ± DS	f	%
Caring Efficacy	86.23 ± 8.74		
Low Efficacy	82.66 ± 9.56	32	48.5 %
High Efficacy	92.41 ± 8.26	34	51.5 %
Caring Behavior	87.6 ± 10.12		
Less Caring	81.22 ± 5.97	27	41.0 %
Caring	89.69 ± 8.73	39	59.0 %

Table 3. The Correlation Test Result between Caring Efficacy and Nurse Caring Behavior in Taking Care of Critical Patients (n = 66)

	Nurse Caring Behavior in Taking Care of Critical Patients	
	(p)	(r)
Caring Efficacy	0.000	0.448

Confidence can determine how someone feels, thinks, motivates and behaves. It will cause various effects through four main processes, including cognitive, motivation, affective, and selection process (Bandura, 1994). Nurses with a high caring efficacy tend to express their care easily to develop relationship with patients and to have belief of solving a problem in a particular situation. Besides, they have belief and care about decisions to one's achievement or result in the development (Coates, 1997).

The result of statistical analysis to caring efficacy of the nurses at critical treatment wards, including the ER, ICU, and HCU of dr Dradjat Prawiranegara Hospital in Serang, Banten Province showed that most of respondents have a high caring efficacy. It was identified from some statement items in the instrument that nurses with a high caring efficacy often feel confident in their ability to give medical interventions and to fulfill patient's needs. Nevertheless, the low caring efficacy was identified

from statement items in which the nurses often feel unconfident to express their empathy, care, and communication. The research results surely are not detached from some factors influencing nurse's caring efficacy, namely nurse's characteristics. The results are parallel to what had been found by Putra, Saleh, & Bahar (2014) who applied linear by linear association analysis to identify correlation among performance, caring efficacy, and respondents' characteristics. They found that sex, education background, length of working, and employment status have correlation to caring efficacy and performance. However, there is no correlation to age.

According to Bandura (1994) in Sufirmansyah (2015), efficacy refers to belief in one's ability to organize and to do a required action to manage a will-be faced situation. Thus, nurses who have a strong belief in their ability will be able to implement an excellent caring. The statement was supported by Rustika (2012), that efficacy has a very important role in daily life. People will be able to use their potentials optimally if their self efficacy support them. One of life aspects influenced by self efficacy is achievement. Efficacy in performing nurse's caring behavior is well-known as caring efficacy. Reid (2011) stated that nurses who work with a good caring efficacy can increase satisfaction of their job. One of some efforts of building confidence, according to Bandura (1994), is Master Experience. It is defined as an experience in mastering a thing, which is directly occurred, in which the success will increase self-efficacy and the failure will decrease it. The next is Vicarious Experience which more sees others' experience in solving their problem to be an example. The last is Social Persuasion which also can be called as feedback on performance. Arousal or physical and emotional confidence also can influence one's self-efficacy level.

Nurse Caring Behavior in Taking Care of Critical Patients

Caring is an important part of nursing practice. Morrison and Burnard (2009) stated that caring in nursing as an essential interpersonal process requires nurses to do a specific role activity as a way of expressing specific emotions, including helping and serving people with special needs. They also explained nursing as a process of helping and serving, which is inseparable with caring process since at the same time they are identified to be practiced together.

The research results identified that most of nurses at the ER, ICU, and HCU have caring behavior. The presence of nurse caring behavior is possibly influenced by respondents' characteristic of 7 years working length average in which nurses often and know more patient's background which makes their caring behavior better. The result is similar with the study of Angelina, Kumaat, & Mulyadi (2017) who stated that most of nurses (76.7%) have caring behavior. The research result in detail showed that more than a half of respondents (59.0%) have caring behavior. The researcher reviewed some statement

items in CES instrument namely nurse's ability in fulfilling patient's needs, such as giving intervention suited to patient's need, facilitating patient need of worshiping, creating a protecting environment such as bed, table, and surrounding cleanliness, always ensuring patient's stability, and being able to receive either positive or negative feeling of patient such as being able to receive patient's comment.

Hidayat (2008) asserted that a professional nurse is required to implement caring behavior in conducting nursing care. Unless nurses implement a good caring behavior, such as differentiating patient, less caring and paying attention, and giving a slow and unstandardized service, they will cause harmful effects for patients, nurses, and hospital party who give nursing service. Moreover, they will create an unpleased perception in patients to nursing service, in which patients may give a bad judgment to the hospital which has given nursing service. It surely will harm the hospital party which patients' trust is decreased, so they are unwilling to visit and receive the hospital service. Finally, the amount of patients' visit to the hospital will be decreased too, then it will cause the decrease of financial income of the hospital.

Nurses are responsible to implement caring behavior. Unless it is implemented, health service and relationship between nurse and patient are less. The effort of improving caring can be done through individual, psychological, and organizational approach. Individual approach can be done by improving knowledge and skills through trainings, seminars, or formal education (Indrastuti, 2010). Organizational approach can be done through reward development plan which relates to nurses' work satisfaction and an effective leadership in nursing (Putri, 2014).

However, the study showed that some respondents (41%) are in category of less caring. The result was shown by the assessment of nurse's communication, in which not all nurses are common to do an intensive communication with patient, relating to expressing feeling, such as expressing care and empathy. Communication is an important part in nursing care. A bad communication makes patient and the family to think that nurses' role seems not good. One of nurses' roles in critical treatment rooms is not only to give nursing service through emotional care but also to become a good communicator. Without showing a good communication to patient's family, it will be difficult to give comfort and to maintain emotional relationship with them. The proposition is similar with the statement of Lukmanulhakim., Suryani., & Anna (2016) who argued that nurses' role is critical in some patient's family issues, such as helping them to identify their strength, to talk openly about patient's condition, and to be realistic and honest about their condition. The scholars also stated that nurses should be careful in saying their fake hope; they should express their hope and trust that patient's family are able to solve the critical situation. Furthermore, nurses should help them to find a way to communicate with nurses and

discuss the uniqueness happened to patient. The statements were also supported by the study of Tumbuan, Mulyadi, & Kallo (2017) who stated that therapeutic communication can improve patient and the family's trust to nurses.

Correlation between Caring Efficacy and Nurse's Caring Behavior in Taking Care Critical Patients

Caring efficacy is a trust of one's ability in expressing care in order to develop care relationship to patients. Health service giving based on nurse's caring behavior is able to improve health service quality. Caring implementation which is integrated to caring efficacy can improve individual health and facilitate nursing care service giving to patients. It is parallel to what had been explained by Patricia, Potter, & Perry (2010), that nursing care becomes benchmark of service quality and patient's or family's satisfaction. Service quality becomes determiner of the image of service institution, which later can improve patient's and family's satisfaction as the service receivers.

The result of research analysis showed that caring efficacy can influence nurse's caring behavior, in which it obtained different means of caring behavior between nurses with low caring efficacy and nurses with high caring efficacy. In other words, there is a meaningful correlation between caring efficacy and nurse's caring behavior. In detail, there were 39 respondents (59%) who showed caring behavior; however, 21 of them showed a less caring behavior (41%). The finding surely will be risky for nursing service, which may impact on a poor nursing service. The proposition is supported by Meilani, & Fitri (2017) who stated that nurse's caring behavior can give influence on a quality service to patients.

It is important for nurses to build and apply caring efficacy into their selves. Nurses who have confidence in their ability to perform caring behavior are urgently required. It does not only relate to their selves or others but also to their job and performance in giving a quality nursing care. Coates (1997) in Reid (2012) stated that nurses who work with a good caring efficacy will be able to improve the satisfaction of their job. The statement was supported by the study of Putra, Saleh, & Bahar (2014) about correlation among caring efficacy, work satisfaction, and nurse's performance in inpatient room. They found that a high caring efficacy can improve nurse's performance. Therefore, caring efficacy and nurse's caring behavior can give benefits to health service since the issues can increase people's trust. It also can give satisfaction to patients; thus, later the quantity of patients who come to hospital will be bigger.

CONCLUSION

The research results showed that nurses with higher of caring efficacy will be easily confident to perform care, attention, and intervention suited to patient's needs. Thus, it can improve nurse's performance in conducting their role as one of nursing worker who should improve nursing service to be better, which

will be seen through their behavior. Nurse's caring behavior can give benefits to service as it can increase nursing care quality and achieve an optimal health service. As the result, patient's and family's satisfaction and people's trust will be achieved.

Findings of this research can be used by academic as a prospective nurse and health professionals, to implement a concept of caring efficacy to improve caring behavior in taking care of critical patients. The researcher suggested nurses in critical treatment wards to more development efforts in improving caring efficacy and caring behavior. Similarly, nurse students also need to build and understand the concept underlying caring efficacy, started from nurse education level by improving caring behavior and implementing it in field study practice. Further research can be a focus on the nursing interventions based on nurses caring behavior to strengthen and increase in taking care of critical patients

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Original Research

Barriers in Tuberculosis Treatment in Rural Areas (Tengger, Osing and Pandalungan) in Indonesia Based on Public Health Center Professional Workers Perspectives: a Qualitative Research

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ABSTRACT

Introduction: Tuberculosis (TB) is still one of the main health problems in Indonesia. Various efforts have been made by the government to handle the TB problem in Indonesia, one of which is implementing a direct observed therapy short course (DOTS) program. However, the handling of TB disease in Indonesia, especially in rural areas is still not optimal. This study aims to explore barriers to the handling of TB in rural areas from the perspective of public health center professionals.

Methods: This study is a qualitative research with a phenomenological approach. Sampling was done by purposive sampling with a sample of 8 participants. Data is collected through focus group discussions. Thematic analysis is carried out using Colaizzi step.

Results: This study obtained two themes. Theme 1 is the barriers in the aspect of TB patients and Theme 2, which is barriers from the aspect of health care facilities.

Conclusion: This study obtained two themes. Theme 1 is the barriers in the aspect of TB patients and Theme 2, which is barriers from the aspect of health care facilities.

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INTRODUCTION

Tuberculosis is an inflammatory disease of the lung parenchyma caused by the bacterium *Mycobacterium tuberculosis*. WHO states that one third of the world's population has been infected with tuberculosis bacteria. Every second there is one person infected with tuberculosis. Although Indonesia has achieved remarkable progress over the past decade, tuberculosis (TB) is still one of the top four causes of death in Indonesia (Usaid, 2017). Based on Global Tuberculosis Report data in 2016, Indonesia ranks second behind India with the most TB patients. The new TB cases in Indonesia in 2016 were 360,565 cases (WHO, 2017).

TB treatment in Indonesia is a Direct Observed Therapy Short-Course (DOTS) strategy promoted by the World Health Organization with the main goal of

achieving successful treatment of TB treatment and a low Case Notification Rate. The aim of this new case discovery program is to find new cases as early as possible so that they can be handled more quickly and do not cause severe complications (WHO, 2013). TB treatment in rural areas is still not optimal. Some obstacles related to the handling of TB are obstacles to the handling of TB diseases such as access to difficult health care places and failure to diagnose TB disease, financial problems (Sagbakken, Frich, & Bjune, 2008), public attitudes and beliefs about TB disease, low level of knowledge about TB (Sullivan, Esmaili, & Cunningham, 2017), stigma and lack of social support (Ahmed & Martin, 2018).

Transmission of TB bacteria by individuals who have not been diagnosed with TB or who have not received treatment yet is still a major problem related to Tuberculosis. Previous study related to

prevention efforts by TB sufferers and families have been conducted (Hutama, Riyanti, & Kusumawati, 2019; Pratiwi, Betty, Hargono, & Widya, 2012), however the literature related to barriers perceived by public health professional workers in the treatment of TB, especially in rural areas, still needs to be explored. Moreover, the health service system in Indonesia has experienced many changes related to TB treatment management policies. Indonesia is a developing country with many rural areas with low levels of health literacy and unproportional public health facilities spread. Health promotion carried out by health workers has often encountered obstacles such as differences in community characteristics, coverage of areas far from the place of service, as well as the dissemination of several topics at once (Tuharea, Suparwati, & Sariatmi, 2014).

Professional nursing practices often experience problems due to cultural differences between modern culture and traditional culture. Barriers related to the handling of TB in rural areas need to be explored to find out what problems can be handled at the public health center and find appropriate ways to reduce the incidence of TB in Indonesia. The barriers that felt by public health professional workers is a personal experience that cannot be measured quantitatively. So this study uses a qualitative approach to underpin the study questions. This study aims to explore the barriers perceived by public health professionals while dealing with TB treatments in rural areas.

MATERIALS AND METHODS

Research Design

This study aims to explore barriers to the handling of TB disease in rural communities from the perspective of public health professional workers who carry out TB treatment programs at public health centers. This study uses qualitative research methods with a phenomenological approach.

Setting



Figure 1 Map of Klakah District

The research area, which is conducted in a public health center, this public health center is handling 12 villages in the klakah sub-district. The population was 54,156 people which is spread in 12 villages and

consists of 60 sub villages. Health services facility in Klakah are one public health center with one supporting public health center, and one medical clinic. The number of TB patients in the Klakah public health center has increased from 53 people in 2017 to 83 people in 2018. Many TB patients in the klakah public health center have not been recorded.

The active TB case finding program is a new program that is implemented in the Klakah public health center and is still not optimal. Sputum examination is still the only diagnostic examination performed at the klakah clinic. X-ray examination is done in a regional hospital that is quite far from the Klakah public health center.

Participants

Participants in this study were public health professional workers who handling of TB programs in Tengger, Osing and Pandalungan areas. The number of participants in this study is 8 health professional workers who have different educational backgrounds and professions.

Data Collection

The study was conducted at the public health center which handlings 12 villages in the Pandalungan, Tengger and Osing areas which were carried out from July to September 2018. Qualitative data collection was carried out by Focus Group Discussions (FGD) method for public health professional workers who served as Tuberculosis control program implementers.

An interview guide was developed to collect information during the FGD process using voice recorders and field notes taken during the discussion process to record findings in gathering information and confirm the validity of the researcher interpretation. FGDs were conducted using Indonesian language and Madura language (the local language of the area where the study was conducted). The interview question was developed with an opening question in the form of "how are the barriers that perceived by public health professional workers regarding the care of TB patients in rural areas?". This FGD group is considered a natural group because most participants know each other so that it is beneficial for the discussion groups dynamics. The discussion activity was carried out in one of the health centers which was moderated by one of the researchers. The discussion process was recorded using a recording device which was then transcribed and one of the other researchers recorded during the discussion process related to the discussion group dynamics.

Data Analysis

Qualitative data analysis in this study used analysis using Colaizi steps (Streubert & Carpenter, 2003). Firstly, the analysis were started with writing the interview in written form (verbatim). Secondly, the verbatim transcript of all of the participants was read repeatedly to identify sentences or words with a particular meaning and provide them with a code

based on the similarities and differences. Afterwards, the process also involved explaining the meaning of the significant sentences and collecting and organizing the formulation of category descriptions into a collection of themes, which resulted in the validation theme. Categories and themes were extracted from the main idea of the statement and the sentence stated by the participants during the interview process (Tristiana, Yusuf, Fitryasari, Wahyuni, & Nihayati, 2018).

Trustworthines

The data analysis process is carried out simultaneously with the data retrieval process. Data retrieval is stopped when reaching data saturation, where no new themes or new categories are found. The researcher checks all participants after verbatim has been completed. To minimize subjectivity, every verbatim result is analyzed by two researchers. The researcher reads the transcript repeatedly to identify important and significant words or sentences that have meaning and encode them based on similarities and differences. Every transcript was then coded systematically against the code frame. Codes were merged into categories and then these categories were organized into themes. Disagreements were discussed among the research team to reach a final consensus. The principal researcher revisited the main points of the findings with the participants and asked whether they were consistent with their experiences. Data analysis was conducted in Bahasa language and the final report was translated into English.

Ethical Consideration

The health ethics committee of the Faculty of Dentistry at Jember University approved the implementation of this research.

RESULTS

This study involved 8 public health centers professional workers who handling with TB disease at Klakah Public Health Center (Table 1): five women and three men aged between 34-48 years with the participant profession namely one doctor, six nurses and one medical analyst.

The emerging theme was formulated on the basis of the participants' answers to the interview in the Focus Group Discussion questions and the notes during the discussion process. This study has two themes that were explained in order to reflect the purpose of the study.

Barriers from the patient's aspects

Discomfort in the side effects of TB drugs

Public health professional workers said that barriers in efforts to treat TB patients, namely discomfort feeling with anti TB drug side effects, health professional workers said some TB patients stopped

Table 1 Demographic Data of Public Health Professional Participants

Characteristic	N=8	Mean Age (in Years)
Age		38.5
Sex		
Female	5	
Male	3	
Ethnicity		
Professional background		
Nurse	6	
Medical doctor	1	
Analyst	1	

Table 2 Theme and Category

Theme	Category
Barriers From Patients Aspects	Discomfort Feeling for Anti TB drugs Side Effects Lack of knowledge of TB Lack of Awareness of TB Non-adherence of TB Treatment Culture and Beliefs
Barriers From health Facility Aspects	Health Facility Access Human Resources Lack of cross-sector collaborations

taking TB drugs due to discomfort with the perceived side effects of anti TB drugs:

"TB patients said that taking anti tuberculosis medicine turns out to be unpleasant feeling, nausea, dizziness, muscle aches, people sometimes unable to endure the side effects that sometimes torture, so they decide to stop the treatment" –Nurse-

Lack of knowledge about Tuberculosis

Public health professional workers said that TB patients consider symptoms of cough to be just a common disease:

"When people are reminded of the symptoms of coughing, they answer that only a normal cough and they are normal and are not considered a serious illness" -Medical doctor-

Lack of self-awareness

Most public health professional workers said that the lack of self-awareness of TB patients about their illness, which is not willing to take their own medication and be evaluated, as stated:

"Awareness level of TB patients is lacking, those who take anti TB drugs in the public health center are other people, even though they are actually capable, so treatment evaluation cannot be done" -Nurse-

Lack of awareness of TB patients related to unclean environment and habit of spitting carelessly despite knowing that TB is an infectious disease:

"In rural area, environment pollution chicken cage, mix with home, ODR spit randomly" - Medical doctor -

Awareness regarding the use of masks to prevent transmission is not carried out by TB sufferers:

"The sick only wear a mask if they go to the health center, but not to other places" awareness to prevent transmission to other people is still low even though often delivered when coming to the health center "-Nurse-

Non-adherence to treatment

The disobedience of TB patients in the TB treatment process is delivered by health workers, TB patients do not take drugs on time, namely:

"Take it not on schedule, up to a week and two weeks and underestimate taking medicine" -Nurse-

Non-adherence to TB treatment is caused because the patient feels bored, every day must take medication:

"The patient feels the drug is bored with anti TB drugs, the level of adherence is only 80%, the rate of drop out is because the patient feels healed or some patients reported feels nauseous, dizzy and feels other uncomfortable effects" -Nurse-

TB patients take anti TB drugs were not according to recommendations from health professional workers as stated:

"The method of taking medication is not according to the recommended three drugs as well as one drink, but they take the drugs one by one up to four times in a day" -Medical doctor-

"Diagnosing, having difficulty removing the sputum even though it has been taught, thus affecting the results of the examination, health workers believe that clinical symptoms indicate TB so that the examination is referred to Thompson's examination with X-rays" whereas the significant result of TB diagnosis was on BTA basis "-analyst-

Barriers from Health Service Facilities Aspects Access to health services

Public health professional workers stated obstacles related to TB treatment in the form of difficulties in access to health care facilities in the form of distance from public health center that deal with one area farther from the public health center that handles other areas, which are stated as follows:

"Regional issues was a problem that interfere the TB treatment. We (health care professional

workers) unable to refuse patients from other regions. The problem is that we can not evaluate patients from other regions in their home, because we have to return the task to the public health center which covered the patients' area, that condition caused the dropout rate is high" -Nurse

"Access to health centers in the same area is further from other health centers, so it is difficult to visit or want to contact" - Nurse-

Distant of public health services from house of TB patients is also an obstacle in handling TB patients:

"Far distant, is the reason from TB patients to drop out" -Nurse-

Lack of Human Resources

The practice of public health center professional workers to actively find TB cases is still not implemented:

"Case finding habits to find cases are still not used by health workers, because it is a new program from government and we still not understand how to do it in community" - medical doctor-

The number of public health center professional workers who handle TB is limited with a high workload:

"The number of public health center professional officers is limited" -Nurse-

The burden of work of many public health center professional workers makes the handling of TB in the community less than optimal:

"The task of program holders is so much that it needs to be activated for TB cadres /community health workers in the community" -Nurse-

"Once a year there is counseling but not evenly distributed, counseling per village that is financed" - Nurse-

Lack of Cross-sector collaborations

Public health center professional stated that cross-sector collaboration did not work effectively, especially for village administrators as stated:

"The activity of the village administrator is still lacking, when they are invited by the public health center to discuss about health problem they never to never come" -Medical doctor-

"There has been no Drug Treatment Supervisor formation with cadres" -Nurse-

"The Drug Treatment Supervisor must be a close person, the family does not understand, the health worker is far away, the cadre is far away, finally it doesn't work" -Nurse-.

DISCUSSION

One of the barriers to the handling of TB disease that comes from TB patients' aspects is the discomfort feeling of anti-TB drugs side effects. Some patients report experiencing the effects of nausea, dizziness, muscle aches which according to them torture themselves and interfere with daily activities so that they decided to stop TB treatment. Previous study stated that the experience of side effects of anti-TB drugs such as joint pain, nausea, dizziness, vomiting (Abbas, 2017) which is uncomfortable for the patients causes the patient to stop treatment (Sang, Obwoye, Kangethe, Ayiro, & Changeiywo, 2017). Health professional workers need to approach TB patients to provide counseling to increase the motivation of TB patients in completing TB treatment and provide appropriate interventions to reduce discomfort due to the side effects of anti-TB drugs.

Lack of knowledge of the community about TB disease is also a barrier to TB treatment completion. The community considers that a prolonged cough is an ordinary cough symptom and does not need to be examined by a health service. Previous study has suggested that a low level of knowledge regarding TB disease can prolong and delay the time for TB testing (Babatunde, Bismark, Amaechi, Gabriel, & Olanike, 2015; Getnet, Demissie, Assefa, Mengistie, & Worku, 2017). Individual behavior associated with the disease will describe the level of individual understanding of the disease (Hassan et al., 2017). Individuals who do not understand about TB disease, including TB symptoms, will assume that TB disease does not need to be addressed as early as possible. The delay in examining TB symptoms will have an impact on the severity of the disease. Health professional workers need to conduct health promotion to the community to improve community knowledge related to TB disease. This is because the TB control and prevention by detecting TB cases in individuals who is at risk of suffering from TB disease will be easier if individuals have good knowledge of TB disease. The government should provide financial assistance for the implementation of TB health promotion, especially in areas with high TB risk and low knowledge of TB, especially in rural areas.

People who suffer from TB also have low self-awareness such as not wanting to come to the public health center to take drugs and evaluate the success of TB treatment. TB patients also still spit carelessly, do not keep the environment clean and do not want to wear a mask to prevent transmission of TB disease even though TB patients know that the disease can be contagious. Prevention of transmission of TB bacteria in TB patients who have infectious status needs to be done especially in the community (World Health Organization, 1999). This is due to sputum management discharges from TB patients who are in an infectious condition a high risk procedure for airborne transmission (Kaul & Nardell, 2011). The attitude of TB patients to the management of sputum disposal is related to the behavior of sputum

discharge (Mei et al., 2012). Patients with TB show a negative attitude towards the management of sputum discharges even though they have been given education by health professional workers. The negative attitude shown by TB patients needs to be reviewed by health workers to determine the right intervention so that TB patients are willing to carry out sputum disposal management in accordance with procedures and safeguarding the environment in order to minimize the risk of transmitting TB bacteria to others.

Non-adherence to treatment is in the form of not taking anti-TB drugs according to the schedule for weeks, feeling bored because they have to take medication every day, and taking medication that is not in accordance with the advice of health workers. The long duration of TB treatment causes physical and emotional exhaustion of TB patients and their families which can have an impact on medication non-compliance (Gebreweld et al., 2018). Health professional workers need to explain the impact that might occur in TB patients if they do not take medication according to the doctor's advice. Health professional workers also need to convey the effect of drug resistance if TB patients do not take medication in accordance with the medical staff's appointments.

Communities in rural areas prefer to seek treatment to alternative, traditional healers rather than to health services related to TB treatment. Previous research also states that almost more than 50% of TB patients go to alternatives first to overcome the TB disease (Viney et al., 2014). People have a culture-related belief in their place of residence in the form of taboos to eat certain foods such as protein. People choose to fast and avoid foods that contain high protein when they know that they are diagnosed with TB disease. While other studies have found that there is insufficient high protein food to be consumed by TB patients that causes non-compliance with TB treatment (Mabunda & Bradley, 2011) in the study area found a culture that prohibits the consumption of high protein foods when individual are diagnosed to have TB diseases. Health professional workers need to approach people who influence the tribes in community in the study area to change the community behavior. The government also needs to facilitate by approaching village administrators and people who are considered influential in these tribes to change beliefs regarding protein foods that should not be consumed by sick people including TB patients.

Access to remote health care facilities and the location of public health center that handle one other area is closer than the location of the public health center serving the tribal areas ofosing, pandalungan and tengger being one of the obstacles in handling TB disease. In Indonesia there has been a tiered health service where patients must come to a level I health facility that provides basic health services before going to health facilities at level II and III. This means that when TB patients feel sick and need treatment, TB patients cannot go directly to second-level health

facilities even though the distance from health services is closer than level I health. This of course can be a cause of TB adherence in TB treatment. Previous research has suggested that the distance to a health service place can be a barrier for sufferers to seek treatment at the health care center (Tristiana, Yusuf, Fitryasari, Wahyuni, & Nihayati, 2018). The government needs to make a breakthrough to overcome the problem of the location of the health service location. In Indonesia, public health centers are still limited to a few places, especially in rural areas. The government can provide TB patients with ease of treatment, for example by providing a mobile TB clinic that can reach all rural areas.

The number of health professional workers handling TB in rural areas is still limited. The limited number of health professional workers is also one of the obstacles. Limitations of TB nurse skills related to intensive case findings (Phetlhu, Bimerew, Marie-Modeste, Naidoo, & Igumbor, 2018) also is one of the obstacles in handling TB disease in the community. The limited number of health professional workers and the high workload that must be borne can hinder the effectiveness of TB treatment. The limited number of officers with wide working areas makes TB treatment not optimal. As stated that the lack of funds related to health promotion and the limited number of health workers make extension activities in the community only carried out once a year. This condition is accompanied by a lack of cross-sector cooperation, especially with village officials. The government needs to facilitate so that cooperation can be established, because community empowerment in handling TB disease needs to be done considering the limited number of health workers. The formation of community health cadres, especially in rural areas with sufficient numbers and good skills training, can reduce the number of TB patients in the Tengger, Osing and Pandalungan tribes.

CONCLUSION

Obstacles related to the handling of TB disease in rural areas in the Tengger, Pandalungan and Osing tribes are obstacles from TB sufferers and also barriers from health facilities. The low level of knowledge and level of public awareness related to TB disease and the persistence of a culture that can inhibit TB handlers need to be addressed. The government in collaboration with health facilities needs to promote health to remote areas in collaboration with people who are considered influential in the area and provide dukun/traditional healer with knowledge of TB in order to accelerate the process of finding TB cases in the community. Problems related to access to health services are also still an issue that often occurs in rural areas. The establishment of mobile TB clinics that can reach all rural areas may be used as an alternative in handling TB in rural areas, especially in Osing, Tengger and Pandalungan.

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Original Research

The Comparison of Progressive Muscle Relaxation Frequency on Anxiety, Blood Pressure, and Pulse of Haemodialysis Patients**Kusnanto Kusnanto¹, Maulana Arif Murtadho², Lilik Herawati³ and Hidayat Arifin²**¹ Faculty of Nursing, Universitas Airlangga, East Java, Indonesia² Master of Nursing Program, Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia³ Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia**ABSTRACT**

Introduction: Haemodialysis is one of the kidney replacements therapies, but, as it cannot wholly replace kidney function, it still causes complications such as increased blood pressure and pulse which can lead to anxiety for the patient. The purpose of this study was to explain the effect of Progressive Muscle Relaxation (PMR) on anxiety, blood pressure and pulse in haemodialysis patients.

Methods: The study design was a true pre-post-test control group design experiment. The total sample was 105 haemodialysis patients taken by purposive sampling technique and divided into two intervention groups and one control group. The independent variable was PMR, and the dependent variables were anxiety, blood pressure and pulse. Data were obtained using a questionnaire and analysed using the Kruskal Wallis Test and Mann-Whitney U test with a significance level <0.05.

Results: The results of the PMR two times per week group analysis for one month showed a significant influence on anxiety ($p=0.000$), blood pressure ($p=0.000$), and pulse rate ($p=0.000$). Mann-Whitney U Test Results showed a significant effect on anxiety ($p=0.004$), blood pressure ($p=0.000$), and pulse ($p=0.000$).

Conclusion: Haemodialysis patients who performed PMR interventions showed a promising outcome on a decrease in anxiety, blood pressure and pulse. The regular application of PMR interventions can control vital signs in patients undergoing haemodialysis

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INTRODUCTION

Chronic Kidney Disease (CKD) is a problem that is often found in the community; in its journey, if it reaches to stage five, it will require kidney replacement therapy in the form of kidney transplantation or dialysis (KDIGO, 2013; Tomson & Taylor, 2015). Between the two types of replacement therapy, dialysis is a standard therapy carried out and haemodialysis (HD) is a procedure that results in the rest of metabolism, and excess fluid is removed from the blood through the artificial kidney (Amini, Goudarzi, Masoudi, Ahmadi, & Momeni, 2016). Haemodialysis cannot heal and is unable to compensate for the loss of metabolic or endocrine activity carried out by the kidneys, so that patients continue to experience complications, including

increased blood pressure and pulse that cannot be controlled. Studies estimating CKD prevalence with HD in general populations worldwide found a consistent rate estimated of 11-13% (Li, Jiang, Wu, Xu, & Miao, 2017; Qureshi, Lorch, & Navaneethan, 2017; Rahimlu, Shab-bidar, & Djafarian, 2017; Trapp et al., 2014; Valika & Peixoto, 2016). The complication raises new more complex problems, including anxiety (Kokoszka et al. 2016). Anxiety in patients who do HD often lacks people's attention, even though the psychological burden experienced by HD patients can affect health and treatment (Li et al., , 2016). Anxiety is a major factor that can reduce the health of HD patients. In our study site location, the interventions are given to patients to reduce anxiety with health education, and there are no additional interventions.

Further efforts are needed to reduce anxiety, blood pressure and pulse experienced by HD patients.

The proportion of the global population with anxiety disorders in 2015 was estimated at 3.6%. Depression and anxiety disorders are more common in women than men (4.6% compared to 2.6% at the global level). The data showed the prevalence of emotional, and mental diseases as indicated by symptoms of depression and anxiety for ages 15 years and older, reaching around 14 million people or 6% of the total population of Indonesia (Riskesdas, 2018). In the blood pressure and pulse rate of 100 haemodialysis patients, an estimated 80 patients experienced changes in both.

One of the essential intradialytic complications to evaluate is cardiovascular problems because it causes an increase in morbidity and mortality in CKD patients undergoing routine haemodialysis (Shin, Yeo, Hong, Hwang, & Kim, 2018). Cardiovascular complications can include blood pressure and pulse that cannot be controlled. In increased blood pressure often associated with renin, fluid overload and sympathetic nerves, these sympathetic nerves also affect the pulse rate in haemodialysis patients. (Li et al, 2017). All complications arising will increase the anxiety felt by the patient. The anxiety in sedentary HD patients can contribute to disease progression and worsen the prognosis (Li et al., 2016). The intervention to minimise complications is usually pharmacological and non-pharmacological therapies, but, due to a disruption in kidney function, an alternative that can be used is non-pharmacological therapy.

PMR is a relaxation technique through two processes, namely tensing and relaxing the muscles of the body, which is a combination of breathing and movement exercises (Mhaske, Poovishnu Devi, & Jagtap, 2018). PMR can reduce anxiety for five times per week (Ramasamy, Panneerselvam, Govindharaj, Kumar, & Nayak, 2018); improved physical function (Ublosakka-Jones, Tongdee, Pachirat, & Jones, 2018); sleeping disorder (Seyedi Chegeni, Gholami, Azargoon, Hossein Pour, Birjandi, & Norollahi, 2018), mental (Li et al., 2015); and quality of life (Ramasamy et al., 2018). Implementation of PMR for five times per week can reduce patient anxiety in the hospital (Amini, Goudarzi, Masoudi, Ahmadi, & Momeni, 2016; Ramasamy, Panneerselvam, Govindharaj, Kumar, & Nayak, 2018), while research conducted by Li et al. (2015) states giving it three times per week can reduce anxiety. The success of an exercise is also determined by the frequency performed. Based on the explanation above, research is needed to analyse the effect of the comparison of PMR frequency two times per week for one month and one time per week on anxiety, blood pressure and pulse frequency in HD patients.

MATERIALS AND METHODS

The research was true-experimental with pre-post-test control group design. The population was 192

haemodialysis patients at "X" Hospital in East Java Province. The total samples were 105 people obtained by purposive sampling with inclusion criteria 1) conscious and cooperative patients (compos mentis) and cooperative; 2) aged >18 years; 3) having HD for >2 months, and undergoing HD twice per week; 4) systolic blood pressure between 120 - 160mmHg, and diastole between 80-110mmHg before HD; and 5) pulse between 70-100 x per minute before HD. The exclusion criteria included: 1) the patient having chronic unstable heart disease; 2) the patient experiences neuromusculoskeletal system disorders such as chronic injuries, fractures, increased intracranial pressure, severe coronary artery disease, and is pregnant; and 3) being weak (haemoglobin (HB)<8). The dropout criteria: 1) respondents resign during the study; 2) respondents are not cooperative in answering the questionnaire given; 3) respondents who did not follow the intervention more than three times in a row and did not take the post-test; and 4) respondents move haemodialysis. The independent variable was the progressive muscle relaxation intervention and the dependent variables were the change in anxiety, blood pressure and pulse. Anxiety was measured with the Covi Anxiety Scale (Lipman & Covi, 1981) which consists of a quantitative anxiety assessment. Blood pressure was measured using an automatic tensiometer, and a pulse with palpation which was then documented on the observation sheet. The collected data were analysed by Kruskal Wallis to analyse differences between groups (treatment 1, treatment 2, and control) and Wilcoxon Signed Rank Test to find out the difference between pre-test and post-test in each group. The researchers assessed the anxiety score using the Covi Anxiety Scale Questionnaire sheet in order to obtain an initial score before the intervention. Then, the researchers conducted a matching technique based on the level of scoring results to try to maintain the homogeneity of respondents and divide respondents into treatment 1 (PMR group two times per week for one month) with 35 respondents, treatment 2 (PMR group once per week for one month) with 35 respondents, and the control group with 35 respondents. After four weeks of intervention, a post-test was conducted on both groups as an evaluation using the Covi Anxiety Scale questionnaire. This study has obtained ethical eligibility from the Health Research Ethics Committee of "X" Hospital with Number 893.3/1873/438.6.7/2019.

RESULTS

The results of studies on the variables anxiety, blood pressure (systole and diastole) and pulse can be seen in Table 1 with 105 respondents. The results of the study on anxiety variables found a significant difference in the significance of anxiety changes in treatment 1 with the control group, obtaining a $p=0.004$ which means that treatment 1 was a change in anxiety compared with the control group. Whereas

Table 1. The intervention of progressive muscle relaxation two times per week for one month (treatment 1) and one time per week for one month (treatment 2) for changes in anxiety, blood pressure (systole and diastole) and pulse.

Variables	Pre	p*	Post	p*	Delta	p*	Mean \pm SD	p**	p***
Anxiety									
Treatment 1	9.91 \pm 2.120	0.000	9.31 \pm 2.153	0.017	-0.60 \pm 0.497	0.000	-0.60 \pm 0.497		0.004
Treatment 2	9.91 \pm 2.120	0.000	9.51 \pm 2.049	0.025	-0.40 \pm 0.497	0.000	-0.40 \pm 0.497	0.015	0.207
Control	9.91 \pm 2.120	0.000	9.66 \pm 2.169	0.001	-0.26 \pm 0.443	0.000	-0.26 \pm 0.443		0.009
Systole Blood Pressure									
Treatment 1	144.86 \pm 12.455	0.004	138.14 \pm 12.25	0.064	-8.14 \pm 4.864	0.000	-8.14 \pm 4.864		0.000
Treatment 2	139.14 \pm 11.973	0.000	135.57 \pm 11.09	0.007	-3.57 \pm 3.109	0.000	-3.57 \pm 3.109	0.000	0.019
Control	140.86 \pm 11.973	0.000	139.00 \pm 9.985	0.001	-1.86 \pm 2.451	0.000	-1.86 \pm 2.451		0.000
Diastole Blood Pressure									
Treatment 1	93.14 \pm 7.960	0.000	86.14 \pm 6.427	0.000	-7.00 \pm 4.236	0.000	-7.00 \pm 4.236		0.000
Treatment 2	89.71 \pm 6.636	0.000	85.71 \pm 5.959	0.017	-4.00 \pm 4.166	0.000	-4.00 \pm 4.166	0.000	0.005
Control	88.00 \pm 9.010	0.000	86.43 \pm 7.130	0.004	-1.57 \pm 2.913	0.000	-1.57 \pm 2.913		0.006
Pulse									
Treatment 1	83.83 \pm 1.706	0.001	80.63 \pm 1.262	0.000	-3.20 \pm 1.828	0.000	-3.20 \pm 1.828		0.000
Treatment 2	83.14 \pm 2.074	0.000	81.37 \pm 1.800	0.000	-1.77 \pm 1.516	0.000	-1.77 \pm 1.516	0.000	0.009
Control	82.29 \pm 2.177	0.000	81.43 \pm 1.720	0.000	-0.86 \pm 1.115	0.000	-0.86 \pm 1.115		0.001

Treatment 1: PMR two times per week for one month

Treatment 2: PMR once per week for one month

p* normality test, Shapiro Wilk (normal p-value 0.05)

p** Kruskal Wallis (p-value 0.05)

p*** Wilcoxon Signed Rank Test (p-value 0.05)

in treatment 2 compared to the control group, it could be interpreted that there was no significant difference because of obtaining a p-value of 0.05. In the comparison of treatment 1 and treatment 2 it can be interpreted that there was no significant difference, with p-value 0.05. Treatment 1 affects anxiety; this is indicated by the difference in anxiety values in treatment 1, treatment 2 and control group.

The results of the study are that blood pressure systole variable showed differences in systolic blood pressure in treatment 1 with the control group obtaining a p=0.000. This means that treatment 1 was a change in systolic blood pressure compared to the control group. With treatment 2 compared to the control group, it can be interpreted that there was a significant difference, with p=0.019, whereas in the comparison of treatment 1 and treatment 2, it can be interpreted that there was a significant difference, with p=0.000. Treatment 1 was the most effective in changes in systolic blood pressure compared to treatment 2; this is indicated by the difference in anxiety values in treatment 1, treatment 2 and the control group.

The results of the study on the blood pressure diastole variable obtained significant diastole blood pressure differences in the three groups. It showed a significant difference with p=0.000, which means that treatment 1 was the best group in diastolic blood pressure changes compared to treatment 2 and control. Thus, it can be concluded that implementation of treatment 1 has an effect on diastolic blood pressure; this is indicated by the difference in the value of diastolic blood pressure in treatment 1, treatment 2 and the control group.

The results of the study on the pulse variable obtained a significant difference in the pulse rate in the three groups and showed a significant difference

with a value of p<0.000, which means that treatment 1 affected the change in pulse rate of haemodialysis patients compared to treatment 2 and the control group. Thus, it can be concluded that implementation of treatment 1 was the most effective against changes in pulse; this is indicated by the difference in the value of pulse changes in treatment 1, treatment 2 and the control group.

DISCUSSION

Anxiety

Variable change in anxiety in the progressive muscle relaxation group two times per week for one month showed a significant decrease, which means there was an influence of PMR two times per week for one month compared to the control group. The progressive muscle relaxation group one time per week for one month showed no significant decrease, which means there was no effect of PMR one time per week for one month compared to the control group. Whereas the comparison of the progressive muscle relaxation group two times per week for one month and the progressive muscle relaxation group one time per week for one month showed a nonsignificant decrease, which means that the administration of PMR two times per week for one month and PMR one time per week for one month were both effective on anxiety changes in haemodialysis patients. However, the PMR group two times per week for one month showed a more effective value when compared to the PMR group one time per week for one month and the control group.

The results of this study are consistent with other studies that show that progressive muscle relaxation can reduce anxiety. Research conducted by Ramasamy, Panneerselvam, Govindharaj, Kumar, and Nayak (2018) states that progressive muscle

relaxation two times a day for 5-6 days per week can reduce anxiety in leprosy patients who are hospitalised. Mhaske, Poovishnu Devi, and Jagtap (2018) state that progressive muscle relaxation two times a day for five days per week can reduce anxiety and depression in patients with chronic obstructive pulmonary disease. Progressive muscle relaxation interventions were more effective in reducing anxiety, fatigue and improving the sleep quality of patients with chronic kidney failure undergoing haemodialysis (Seyedi Chegeni et al. 2018). Progressive muscle relaxation is effective in reducing anxiety, depression and improving mental health in patients with pulmonary arterial hypertension.

Progressive muscle relaxation causes contraction of skeletal muscle fibres which leads to a sensation of muscle tension. In this case, the central nervous system involving the sympathetic nerves and the parasympathetic nervous system. Some organs are affected by these two nervous systems between sympathetic and parasympathetic work reciprocity. The activity of the parasympathetic nervous system is also called trophotropic, which can cause feelings of wanting to rest and physical repair of the body. The parasympathetic response includes a decrease in pulse and blood pressure, increased blood flow and suppression of tension and anxiety. Therefore, progressive muscle relaxation exercises can bring a relaxation response so that it can achieve a state of calm and stress will decrease. Comfortable feelings are passed on to the hypothalamus to produce Corticotropin-Releasing Factor (CRF). The CRF stimulates the pituitary gland to increase the production of endorphin, enkephalin and serotonin which can ultimately increase patient comfort. Feeling comfortable and relaxed can cause anxiety to decrease (Smeltzer, Bare, & Hinkle, 2015).

In this study, demographic characteristics between groups are the same. Thus it does not affect the results. The researchers believe that the change in anxiety in this study occurred due to the influence of progressive muscle relaxation two times per week for one month, which stimulates the pituitary gland to increase endorphin production, which can ultimately increase patient comfort. This comfortable and relaxed feeling can cause a decrease in anxiety, blood pressure and pulse rate (Smeltzer et al., 2015). In the control group, most respondents did not experience changes in anxiety, this is because respondents in the control group only received health education and the absence of interventions that could increase comfort caused anxiety in most patients in the control group to not decrease.

Blood pressure

In the variable changes in blood pressure, the progressive muscle relaxation group two times per week for one month showed a significant decrease, which means there was an influence of PMR two times per week for one month compared to the control group. The progressive muscle relaxation group one time per week for one month showed a

significant decrease, which means there was an effect of PMR one time per week for one month compared to the control group. Whereas the comparison of the progressive muscle relaxation group two times per week for one month and the progressive muscle relaxation group one time per week for one month showed a significant decrease, meaning that the administration of PMR two times per week for one month was more effective when compared to the PMR one time per week for one month in regard to changes in blood pressure in haemodialysis patients.

The results of this study are consistent with other studies that show that progressive muscle relaxation can reduce blood pressure. Research conducted by Rosdiana and Cahyati (2019) states that progressive muscle relaxation once a day for seven days can lower blood pressure in hypertensive patients). Herawati and Azizah (2016) stated that progressive muscle relaxation two times a day for seven days can reduce systolic blood pressure in hypertensive patients. With progressive muscle relaxation interventions, blood pressure in hypertensive patients are more likely to fall than without progressive muscle relaxation (Sulaeman, 2018). Progressive muscle relaxation is effective in reducing blood pressure in hypertensive patients (Arisjulyanto, 2019). This comfortable and relaxed feeling can cause blood pressure to decrease (Herawati & Azizah, 2016).

In this study, the demographic characteristics between the PMR groups of the control group were the same, so that they did not affect the results. The researchers believe that changes in blood pressure in this study occurred because of the effect of progressive muscle relaxation that stimulates the pituitary gland to increase endorphin production, which can ultimately increase patient comfort. This comfortable and relaxed feeling can cause a decrease in blood pressure (Herawati & Azizah, 2016). In the control group, most of the respondents did not experience changes in blood pressure; this is because respondents in the control group only received health and the absence of interventions that can increase the sense of comfort and relaxation caused blood pressure in most patients in the control group to not decrease.

Pulse

In the variable pulse change, the progressive muscle relaxation group two times per week for one month showed a significant decrease, which means there was an influence of PMR two times per week for one month compared to the control group. The progressive muscle relaxation group one time per week for one month also showed a significant decrease, which means there was an effect of PMR one time per week for one month compared to the control group. Whereas the comparison of the progressive muscle relaxation group two times per week for one month and the progressive muscle relaxation group one time per week for one month showed a significant decrease, meaning that the administration of PMR two times per week for one month was more effective

when compared to the PMR one time per week for one month on changes in pulse in haemodialysis patients.

The results of this study are in agreement with other studies that show that progressive muscle relaxation can reduce the pulse rate. Research conducted by Khanna (2007) states that progressive muscle relaxation once a day for ten consecutive days can reduce the pulse rate in women with high-stress levels (Khanna, Paul, & Sandhu, 2007). Progressive muscle relaxation interventions two times per week can reduce the pulse rate in surgical patients (Ko & Lin, 2012). Intervention of progressive muscle relaxation, two times per week for one month meant the pulse rate and stress in students decreased (Shinde, Kini, Naik, & Desousa, 2015).

High pulse in haemodialysis patients can be caused by anxiety experienced. Anxiety occurs due to the stimulation of the endocrine and autonomic systems. Hyperactivity to stimulants in the autonomic nerve due to anxiety can affect several organs and results in other symptoms, such as increased pulse rate. In this study, the demographic characteristics between the PMR groups of the control group were the same, so that they did not affect the results. The researchers believe that the change in pulse rate in this study occurred due to the effect of progressive muscle relaxation which stimulates the pituitary gland to increase endorphin production, which can ultimately increase patient comfort. This feeling of comfort and relaxation can cause a decrease in pulse (Herawati & Azizah, 2016). In the control group, most respondents did not experience a change in pulse, and this is because respondents in the control group only received health education and the absence of interventions that could increase the sense of comfort and relaxation which caused the pulse rate in most patients in the control group to not decrease.

CONCLUSION

From the results of the study it can be concluded that increasing the intensity of PMR interventions can have a positive effect on reducing anxiety levels, controlled blood pressure and regular pulse. It is hoped that further researchers will be able to develop PMR methods that can be effective and be used to resolve health problems in haemodialysis patients or others. The contribution of the study is in affording new information and techniques to maintain anxiety, blood pressure and pulse of haemodialysis patients. The application of PMR interventions can be given by nurses regularly to patients undergoing haemodialysis so that vital signs, including anxiety, blood pressure and pulse, can be controlled.

LIMITATION

Limitations in this study are that it only uses the progressive muscle relaxation group two times per week for one-month, progressive muscle relaxation one times per week for one month and the control group. Thus, it was necessary to add sufficient

interventions as a comparison to see the effectiveness of progressive muscle relaxation therapy.

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Original Research

The Factors Related to the Caring Behavior of Clinical Nursing Students

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ABSTRACT

Introduction: The CB of clinical nursing students is very important but they are still in the implementation phase of the theory from when it was learned in college. This study aims to describe the correlation between intelligence quotient (IQ), emotional intelligence (EI) and spiritual intelligence (SI) with caring behavior (CB).

Methods: This study was descriptive and correlational with a cross-sectional approach. The respondents of this research were all of the clinical nursing students (166 respondents) via the simple random sampling technique. The data was collected using questionnaires and analyzed using the Spearman-rho test with a level of significance ≤ 0.05 .

Results: The results showed that CB had a correlation with IQ ($p=0.019$, $r=0.211$), EI ($p=0.048$, $r=0.178$) and SI ($p=0.000$, $r=0.456$).

Conclusion: IQ, EI, and SI have a correlation with CB. A higher quotient will produce a higher CB. Future research is expected to be able to analyze the other factors related to CB among clinical nursing students.

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intelligence quotient; emotional intelligence; spiritual intelligence; CB; clinical nursing student

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INTRODUCTION

Clinical nursing students are fully implemented in practical health settings such as hospitals, health centers, maternity hospitals, nursing homes, families, communities and societies (Nursalam, 2015). The practice of student clinics has so far been deemed to lack the caring attitude of prospective professional nurses. Unlike the nurses who already have the full authority to treat patients, students are often required to behave in the same caring manner as professional nurses. Therefore, studies are needed to explain what factors influence the CB of students in their clinical practice in hospitals.

Caring is a special form of performance made by the nurses and the clinical nursing students who are enrolled on the nursing profession program of education. Swanson (Swanson, 1991) stated that Caring is a nursing technique in relation to the value of one's feelings about commitment and responsibility. In the theory of the Middle Range Theory of Caring, Swanson (Swanson, 1991) found that the five processes of Caring involve becoming more practical. They are maintaining belief, knowing, being with, doing for (active component) and enabling (possible component).

Gibson (Gibson, J. L., Ivancevich, J. M., & Donnelly, 1987) stated that a person's behavior and performance is influenced by three factors. These factors are individual factors, psychological factors and organizational factors. Gibson et al (Gibson, J. L., Ivancevich, J. M., Donnelly, J. H., & Konopaske, 2012) found that the variables of ability and skill under the individual factors are the main factors that influence a person's behavior and performance. According to Hawari, the skill of intelligence is divided into four kinds of intelligence. These kinds are IQ, EI, SI, and creative quotient (Hawari, 2006).

IQ is the cognitive ability that is interpreted as IQ where the ability includes achievement in learning and problem solving (Behling, 1998). IQ refers to being smart, intelligent and clear-minded based on the knowledge that can be described as including academic and non-academic learning achievements (Ministry of Education and Culture, 2000). The knowledge of nursing can be seen in the behavior of caring (Swanson, 1993). Nursing students are potential nurses in the future that will have academic qualifications. They will also have the right to CB (Murphy, F. & Robert, 2009). Rhodes identified that the intellectual level of a student will challenge his

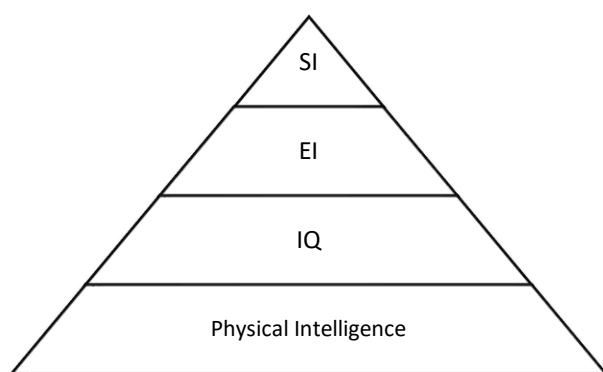


Figure 1 - Significance of SI and EI on the CB of Nurses: A Simple Model of Four Intelligences by Gardner 1983 (Kaur & Sambasivan, 2015).

intellect as a part of gaining their nursing knowledge and skills (Rhodes, M. K., Lazenby, R., & Moris, 2011).

EI is the ability to motivate yourself and to survive when facing problems. It is about relying on the spirit and not being too excessive in terms of pleasure. It is also about managing one's moods, avoiding stress, the ability to think, to empathize and to pray (Goleman, 2015). The elements of EI were self-awareness, self-management, motivation, empathy and social skills.

SI is a set of mental capacities that including taking responsibility for awareness, integration, and the non-material aspects of adoption used. It is the things that are realized in the transcendent area (King, 2008). There are four aspects that can be observed in SI, each of which represents the measurements within the SI Self-Report Inventory Questionnaire (SISRI-24). They were Critical Existential Thinking (CET), Personal Meaning Production (PMP), Transcendental Awareness (TA) and Conscious State Expansion (CSE). The purpose of this study is to describe the correlation between IQ, EI, and SI with CB.

MATERIALS AND METHODS

This study was descriptive and correlational with a cross-sectional approach. The study was conducted in the Faculty of Nursing (FoN) Universitas Airlangga (UA) between October and December 2018. The independent variables in this study were IQ, EI and SI. The dependent variable of this study was CB. The population of this study consisted of the clinical nursing students of the FoN UA 2018. The total sample in this study was 123 people chosen using simple random sampling. The procedure of the data collection in this study was divided into two stages, namely preparation and implementation. The preparation stage involved licensing and two tests, namely ethical testing and the validity and reliability test focused on the questionnaire. The first step was where the researcher tested the validity and reliability of the questionnaire. The researcher adopted the questions on each variable from the previous research conducted in Indonesia (within a span of five years). The ethical test phase was carried out at the Ethics Committee of the FoN UA. The results

of the ethical test were that the study had an ethical score of 1187-KEPK. The researcher received a research permit from the FoN UA.

The next stage was implementation. This stage was the step used for collecting the research data from the respondents. The researcher obtained a list of clinical nursing students from FoN UA. This was used by the researchers to conduct sampling according to the criteria previously set. The questionnaires were distributed to the respondents and they filled out the informed consent sheet after the researcher explained the purpose and benefits of the research. Next, the researcher calculated the score from each questionnaire by summing up each answer to the questions. The final results were obtained by the total score used to analyze the data. This was done using the Spearman Rho test with a p value <0.05 .

The academic workload questionnaire was adapted from Wijaya (Wijaya, A., 2015). IQ was taken from the academic score data. The EI questionnaire adopted was a questionnaire by Iswanto (2014) (Rifai, 2017). The SI questionnaire was adopted from Wulandari (2013). The CB questionnaire was taken from the caring, professional scale (CPS), which is the standard questionnaire. All of the questions were tested for validity and reliability.

RESULTS

Table 1 shows that most of the respondents were women. For the age of the respondents, nearly half of them were aged 22 years old. The majority of the respondents were Force A14. Most of the respondents - almost half - exist in the category of stage management.

Table 2 indicates that the IQ of the respondents can be viewed from their academic score. Most of the academic scores were in the range of 2.76 to 3.50 with honors. The EI clinical nursing students in 2018 at the FoN UA, Universitas Airlangga, were found mostly to be in the medium category. The SI clinical nursing students in 2018 at the FoN UA were mostly found to be in the medium category. The clinical nursing students and CB nurses in 2018 from FoN UA were found to be mostly in the high category.

Table 3 shows that IQ has a correlation with CB although the strength of the correlation is weak. EI has a correlation with CB and the strength of the correlation is very weak. SI has a correlation with CB with a medium correlation strength.

DISCUSSION

The correlation between IQ and CB

IQ has a weak correlation with the caring behavior done by the students. This means that the higher IQ that the students have, the higher the caring behavior of the clinical nursing students.

This is in line with the research conducted by Wijaya (Wijaya, A., 2015). The results of his study stated that IQ (GPA) has a relationship with a moderate correlation. The number of respondents

Table 1. Characteristics of the Respondents (n=123)

Characteristics	f	%
Gender		
Man	25	20.3
Woman	98	79.7
Age		
21	17	13.8
22	52	42.3
23	31	25.2
24	17	13.8
25	6	4.9
Class		
B19	54	43.9
A14	69	56.1
Stage		
Management	36	29.3
Emergency	17	13.8
Geriatric	5	4.1
Child	17	13.8
Soul	4	3.3
Community	17	13.8
Maternity	20	16.3
Medical-surgical	7	5.7

totaled 26 respondents with the level of caring in the medium range. The category of IQ of the respondents was found to be very satisfying/moderate. It was also stated by Murphy (Murphy, F. & Robert, 2009), that the higher the educational qualifications or academic achievements of the students, the better the quality of caring by the nurses. The higher the intelligence of the individual, the lower the level of human error related to the caring done by the nurses. This could increase the quality of the behavior related to the caring of an individual.

According to Gibson (Gibson, J. L., Ivancevich, J. M., & Donnely, 1987), the factors that influence performance are the abilities and skills where intelligence is one of the main factors associated with individual behavior and performance. Swanson (Swanson, 1991) found out that the first domain associated with CB refers to a person's capacity to pay attention. IQ or intelligence (IQ) can be defined as the ability to work in a theoretical way using ideas, symbols, logical relationships and theoretical concepts. This is the ability to recognize, learn and use these preliminary concepts. The ability to solve problems belongs to a new issue (Hawari, 2006). Rhodes stated that the intellectual level of a student relates to the challenge to his intellect in order for them to gain the knowledge, abilities and skills involved in nursing (Rhodes, M. K., Lazenby, R., & Moris, 2011).

A high intellectual ability will make it easier for the students to remember and use their knowledge in performance, which is called CB. Increasing the level of CB done by the clinical nursing students belongs to knowledge, as does studying with the lecturers and benefiting from their guidance while in the practical settings. The more IQ that the individual has, the students will be able to understand and apply the theory more. A high IQ score means that the students are expected to have a good memory. While the students use their theory knowledge, they can

minimize the human error factor of performance and caring. It is expected that the students can improve their performance and caring in order to be better.

The correlation between EI and CB

EI has a correlation with CB, although it is a very weak correlation. This has the meaning that the higher the EI, the higher the CB that the students have.

In the research conducted by Rifai (Rifai, 2017), it was found that there was a significant relationship between EI and the caring behavior of the nurses. While implementing the factors of recognizing self-emotion, controlling self-emotion, motivating oneself, and establishing relationships and empathy in the process of nursing, it will lead to a good CB in the patients. According to Kaur and Sambasivan (Kaur, D. & Sambasivan, 2015), they stated that EI has a highly significant relationship with the CB of the nurse. EI is not obtained instantly. It is obtained through the mechanisms of training, education and other things that enhance the comprehension of their nursing knowledge. In addition, according to Nightingale et al. (Nightingale, S., Hsiang, C.P., & Eng, 2018) in his research, it was found that the more that the nurses develop their EI, the more they can increase the CB of the nurses spontaneously. The more that the EI of the nurses' increases, the more that the nurses will be professional when doing CB, including being smart when solving problems and increasingly being able to lead when it comes to solving nursing problems.

Goleman (Goleman, 2015) stated that EI is the ability to motivate oneself and how to survive when facing problems, including relying on spirit and not being too excessive in terms of pleasure, to manage their moods, to avoid stress and the inability to think, to empathize and to pray. The aspect of EI is closely related to CB in nurses. It can be seen that aspects of EI become an important component in influencing the nurses' behavior. Swanson (Swanson, 1993) stated that CB is closely related to empathy. The nurses who are able to do caring well will show empathy to their patients. The nature of empathy is the main element of EI. Besides that, holding in anger in the area of nursing is also closely related to optimal caring.

EI is a non-academic intelligence that must be learnt by the students in order for them to be able to do caring properly. For the factor of self-awareness, the clinical nursing students must be careful when carrying out nursing care. They must be able to adapt to the practice environment and they must be able to innovate if there is a gap between theory and practice. We have then focused on the self-regulation factors that influences *caring*. Clinical nursing students are required to be able to withstand emotions if there are undesirable things encountered in the professional practice environment. This is because it will greatly interfere with the process of the client's recovery and the performance of the nursing care services.

Empathy is the closest factors of EI to CB. The level of empathy held by each individual is different. At the lowest level, empathy requires the ability to feel other's emotions. At the highest level, empathy

Table 2. IQ, EI, SI and CB Clinical Nursing Students (n=123)

Variables	f	%
IQ (GPA score)		
2.00 to 2.75 (Excellent)	1	0.8
2.76 to 3.50 (Honors)	83	67.5
3.50 to 4.00 (Cum laude)	39	31.7
EI		
Low	1	0.8
Medium	79	64.2
High	43	35.0
SI		
Low	2	1.6
Medium	86	69.9
High	35	28.5
CB		
Low	4	3.3
Medium	51	41.5
High	68	55.3

Table 3. Workload, Academic Relations, IQ, EI and SI of the CB Clinical Nursing Students (n=123)

Independent	Dependent CB	
IQ	<i>p value:</i> 0,019	<i>r:</i> 0.0211
EI	<i>p value:</i> 0,048	<i>r:</i> 0.178
SI	<i>p value:</i> 0,001	<i>r:</i> 0.456

requires someone to feel while responding to someone else's needs or feelings that are not described in words. Then there are the factors related to the social skills that influence CB. The main meaning of social skills is the art of dealing with the other's emotions. This is the basics of several skills such as the medical devices used in doing CB, being able to communicate therapeutically with patients and their colleagues and being able to manage any problems faced so then it does not appear again during the process of caring. The last factor is the motivation that influences CB. Managing emotions such as paying attention, motivating and knowing oneself, and being creative are all very important things in order to achieve the goals before them.

The correlation between SI and CB

SI has a correlation with the CB of clinical nursing students with a moderate correlation. This means that the higher the SI that the students have, the better that the clinical nursing students behave in terms of caring.

These results are in line with the study of Hossein (Hossein, 2015) which stated that SI with CB and clinical competence results in a good quality of caring. This is in line with the increasing number of nurses with good clinical competence who will also deal with CB and SI. It was also stated by Moradnezhad that increasing SI will improve the spiritual care provided, in addition to CB and the quality of care given by the university students. The nurses' spirituality can also reduce their stress level in their job (Moradnezhad, 2017).

According to King (King, 2008), SI is defined as a set of mental capacities that contribute to the awareness, integration, and application of adaptive

non-material aspects to consider in the area of the transcendent, leading to results such as deep existential meaning improvement, the recognition of self-transcendence, and mastery of the spiritual arena. This is supported by the theory of SI put forward by Zohar & Marshall (Zohar, D. & Marshall, 2010). SI is the intelligence that is created to deal with and solve some of the problems present in meaning and value. Subjects sometimes get confused because there is still a difference between religious and spiritual concepts. The subjects must have a good spiritual level to be able to perform their service tasks optimally. Nursing and CB services are very important when looking to get positive results on the health and well-being of clients (Swanson, 1991). *Caring* is not merely just doing the action so then it is finished. It must also present a caring nature that works together with the nurse's spirituality focused towards the client.

SI is the highest intelligence that can be possessed by humans. SI can control individual behavior to encourage them to take action according to the right thing to do. Therefore, the nurses' and clinical nursing students' spirituality should be established in order to achieve good CB. For the existential critical thinking factors that influence CB, clinical nursing students must be able to understand the reality that they are facing which is dealing with individuals who need help, treatment rooms that have many patients, time to reflect on or think and then interventions to carry out limited nursing care and death. The more capable their existential critical thinking, the more it is hoped that this will increase the CB that is possessed. In forming the self-perception of factors that affect caring, the components included are the elements of the adaptability of the meaning and purpose of life and the reason to live, the meaning of failure, making decisions in accordance with the purpose of life, and the meaning and purpose of daily events. From the components above, it is expected that the respondent can learn the meaning in order to be able to do CB properly.

In the transcendental intelligence factor or the ability to perceive the spiritual dimension of life, it is about reflecting what was previously described as feeling a more tangible, wider spread presence and our special senses. The last factor is the development of the area of consciousness. Self-awareness is the main differentiator between people who have a high level of spirituality and those who do not. People who have high awareness will always think several times before responding to each situation, and taking a moment to understand what is hidden or real before doing the initial response. They always act in a manner that is calculated, considered and cautious. Moreover, the clinical nursing students, are required to think more deeply when facing each situation so then they are not mistaken when carrying out nursing.

CONCLUSION

IQ has a correlation with CB. The high score of IQ can be seen from the high GPA that makes for good CB. EI has a correlation with CB. A higher EI will make for good CB. SI has a correlation with CB. A higher SI will make for good CB.

The clinical nursing students are expected to maintain their CB. For students who have CB at a moderate level, they are expected to improve their quality of CB by increasing their self-regulation, motivation, social skills, critical thinking, the shaping of their personal perception, transcendental awareness and the development of other areas of awareness in order to become clinical nursing students after finishing their education. For institutions, it is necessary to provide people who have competence in religion to teach nursing and to provide emotional training for the clinical nursing students. For further research, this study could be developed further in order to be able to analyze the other factors related to the CB of clinical nursing students.

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Original Research

Individual Coaching During Hospitalization Improves the Spirituality of Muslim Patients**Hamdan Hariawan¹, Oedojo Soedirham² and Abu Bakar¹**¹ Faculty of Nursing, Universitas Airlangga, Surabaya, East Java, Indonesia² Faculty of Public Health, Universitas Airlangga, Surabaya, East Java, Indonesia**ABSTRACT**

Introduction: Patients treated in hospital often experience an uncomfortable condition. This condition can lead to a decrease in performing salat as a Muslim prayer. The purpose of this study was to determine the effect of individual coaching on the spirituality of Muslims including knowledge, attitude, and the practice of salat.

Methods: This study used a quasi-experimental design. The sample consisted of 36 Muslim inpatients. The data was collected through a self-constructed questionnaire and it was analyzed using the independent t-test and Mann Whitney test with $\alpha \leq 0.05$.

Results: There was no significant difference in the scores for knowledge ($p=0.941$), attitude ($p=0.924$) and practice ($p=0.635$) between the two groups before the intervention. However, after being given the intervention, the scores increased for the treatment group, thus creating a significant difference between the treatment and control groups for knowledge ($p=0.000$), attitude ($p=0.003$) and practice ($p=0.000$).

Conclusion: Coaching is a suitable method to use to increase the Muslim inpatients' knowledge, attitude, and ability to practice salat. This study recommends that the nurses conduct coaching as a nursing intervention to help the patient to perform salat.

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INTRODUCTION

Nowadays, inpatients often have problems related to doing all of the physical activities related to worship (Hubbart, Corey, & Kautz, 2012). The patient will potentially be equipped with medical devices such as for the purpose of medication infusion, catheter tubing, and oxygen tubes up the nose which causes inconvenient and unconfident conditions concerning the patients performing (praying) salat in the hospital. Salat is a spiritual activity that is a form of worship of the Creator of the universe. It is about moving certain parts of the body while reciting Doa. Salat is an obligation for all Muslims in either a healthy or critical condition (Al-Obaidi, Wall, Mulekar, & Al-Mutairie, 2012); Mohamed, Nelson, Wood, & Moss, 2015; (Akgul & Karadag, 2016).

Based on a study conducted in Langkawi Hospital involving 166 Muslim inpatients, 53.6% had a poor

level of knowledge of performing salat, 61.4% had a poor level of attitude when performing salat and 78.9% patients did not perform salat during their stay in the inpatient care facility. This study also revealed that 77.7% patients did not know how to perform salat during their medical treatment, while 47.6% of patients did not know how to purify themselves of impurities (Wudu) and 48.2% patients said that nobody was there to teach them how to perform salat and the required ritual purification (Aris, Rani, Jaafar, Norazmi, & Umar, 2017).

Salat is a fundamental and spiritual need for Muslims during their inpatient care facility. Salat performed in a critical condition can increase the sense of convenience and decrease anxiety, depression, and stress (Kurniawati, 2017). Salat is also useful when related to the patient's readiness and mentality when facing a critical health condition (Sanotis, 2015). The patients who cannot perform

salat due to their physical disabilities easily encounter spiritual distress (Herdman & Kamitsuru, 2014).

The patients deem it necessary to get information and education regarding the implementation of salat when in a critical condition (Mohamed et al., 2015). The method used to provide information on how to perform salat in the hospital is coaching (Palmer, 2012). Coaching does not only contain education but also encouragement when it comes to the patients being able to worship according to their own will. This method is started by identifying the ability level of the patient for practicing salat based on their background knowledge. The patient will be prepared and motivated before performing salat (Macadam, 2013). The previous study showed that the use of the coaching method provides solutions in both the clinic and the community, such as increasing self-efficacy, health education, life quality and the self-treatment of the patient (Bennett et al., 2009; Vanacker et al., 2017; Wagner et al., 2017). Based on the concept of spirituality and spiritual self-care within Orem's self-care deficit nursing theory, salat is directly influenced by self-care agency and increasing the knowledge and attitude of the patient through the intervention (White, Peters, & Schim, 2011). Therefore, the purpose of the study is to examine the influence of individual coaching towards the knowledge, attitude, and practice of salat among Muslim inpatients.

MATERIALS AND METHODS

This study applied a quasi-experimental design and it consisted of a pre- and post-test of the control group. The sample involved 36 Muslim inpatients and they were selected using a random sampling technique. The independent variable was modular individual coaching while the dependent variable was spiritual Muslims (referring to the knowledge, attitude, and practice of salat). The data was collected using questionnaires developed from Yusuf (AH Yusuf, Nihayati, Iswari, & Okviasanti, 2017). The questionnaire on knowledge covered the concept of ritual purification, salat practice during the critical condition, and the benefits of salat. The questionnaire of attitude covered the implementation of ritual purification, salat during the critical condition, and family support. The questionnaires have been tested for reliability and they had a Cronbach's Alpha score of 0.571.

The criteria for the patients in this study were as follows: 1) Muslim patients aged 18 - 65 years old, 2) cooperative patients with compos mentis, 3) patients with a degree of partial and total dependence and 4) female patients who are not menstruating. The intervention group was given the intervention (a module of individual coaching) by a spiritual guidance counselor from the hospital over 7 days for a duration of 10 - 60 minutes while the control group was not. The statistical test used in this study was the Independent t-test for the knowledge variable and the Mann Whitney test for the attitude and practice variables. This study received an ethical agreement from the Ethics Committee of Rumah Sakit Umum Daerah Nusa Tenggara Barat Number: 070.1/01/KEP/2018.

RESULTS

The characteristics of the respondents based on sex both in the treatment group and in the control group, showed that they were almost entirely male, totalling 14 respondents (77.8%) in the treatment group and 12 respondents (66.7%) in the control group. The characteristics of the respondents based on age in the treatment group showed that almost half were in the age range of 36 - 45 years, with 8 respondents (44.4%) in each group. The characteristics of the respondents based on education in the treatment group showed that almost half of them were in junior and senior high school, each of which was 6 respondents (33.3%). In the control group, almost half had an elementary school education, totalling 7 respondents (38.9%). The characteristics based on length of stay before the data collection showed that almost all of the respondents had been hospitalized for more than 3 days with a total of 15 respondents in the treatment group (83.3%) and 13 respondents in the control group (72.2%).

Based on Table 1, the mean score of the intervention group was lower than that of the control group. After receiving the intervention, the mean score of the treatment group was higher than that of the control group in three aspects (knowledge, attitude, and salat practice).

Based on the statistical test, after receiving the intervention, the knowledge aspect reached $p=0.000$, the attitude aspect reached $p=0.003$ and the practice aspect reached $p=0.000$. This result shows that there is a difference between the two groups after receiving the intervention. This difference indicates that

Table 1. Data on Knowledge, Attitude, and the Practice of Salat (Spiritually)

Variables	Groups	Pre (Mean+SD)	Min-Max	Post (Mean+SD)	Min-Max
Knowledge	Intervention	14.33+2.17	11-19	19.00+1.72	14-20
	Control	14.39+2.28	11-19	14.89+2.29	11-19
	P value	p = 0.941			
Attitude	Intervention	26.17+2.31	22-31	29.67+2.25	25-32
	Control	26.50+3.17	22-32	26.61+2.81	23-32
	P value	p = 0.924			
Practice	Intervention	10.00+2.91	9-18	15.33+3.80	9-18
	Control	10.50+3.45	9-18	10.50+3.45	9-18
	P value	p = 0.635			

individual coaching influences the knowledge, attitude, and practice of salat in patients who are hospitalized.

DISCUSSION

The results of the study show that individual coaching influences the knowledge, attitude, and practice of salat among Muslim inpatients. Based on the average score of the pre- and post-test, the treatment group is higher than the control group in knowledge, attitude, and the practice of salat after receiving individual coaching.

Coaching is given to increase individual knowledge. Coaching is also defined as a patient-centered education method aimed at motivating an individual to promote health through self-management (Anna, Dejonghe, Becker, Froboese, & Schaller, 2017). The increase in knowledge can be obtained through education, which is a part of coaching (Cheng & Chan, 2009 ; Calderón-Garcidueñas et al., 2015). Training is an essential part of helping the patient by equipping them with visual aids when explaining the procedure of specific actions independently. Moreover, education should be provided by the experts based on their expertise, and this could create self-confidence in the patient. Coaching is beneficial for increasing knowledge among elderly patients with cognitive disorders. The increase in knowledge does not take a short time due to the cognitive development remaining decreased according to the process of aging (Güçlü & Tabak, 2013 ; Omori et al., 2017).

The level of knowledge among the patients after receiving the intervention gradually increases their cognitive development. They already know about the concept of ritual purification using dust (tayammum), and the parts of the body that should be wiped by the motes of dust. The patient's knowledge will improve gradually about salat in either a sitting or standing condition. Individual coaching is thus useful for the patient to perform salat in the hospital. Moreover, the patient is equipped with a flipchart, Wudu spray bottles, and motes of dust to directly practice what the coach has taught.

Education with a spiritual value can increase the spiritual well-being of the patient which leads to confidence and increased religiosity focused on the God Almighty. Thus the patient will obtain additional motivation to implement the obligation of the worship of God (Hasanshahi & Mazaheri, 2016). The increase in the attitude of the patient occurred due to the motivation given during the coaching session. The coaching consists of motivational interviewing that influences the attitude of the patient and that is directed to encouraging the obedience to commit something (David H. Thom et al., 2016 ; Román-Rodríguez et al., 2017). The attitude aspect has been formed due to the reciprocal relationship between individuals and the environment in establishing personal behavior (Azwar, 2003). Social interaction is considered to be important in terms of affecting

individual behavior while performing salat, which was conducted by the patient, nurse, coach, and other medical staff.

Salat is a form of spiritual self-care. In the theory of self-care deficit nursing, a supportive-educative aspect is aimed at supporting an individual to obtain additional motivation and information before conducting self-treatment. The nurse's action is to organize training and self-treatment agencies for the patient while the patient's action is to promote self-care until the end of their treatment (Alligood, 2014). If self-care deficit nursing is connected by spirituality, then the self-care agency of the patient will involve power components such as knowledge and attitude regarding their spiritual practices. The existence of self-care agency can improve the power component. Therefore, this study used a nursing agency to provide the individual coaching intervention.

The development of attitude among the patients after receiving the intervention occurs due to the increase in their sense of comfort. Primarily, the patient can perform salat in emergency conditions (not purified), such as where there are dirty clothes or a strange place. It can be achieved if there is individual coaching in the form of personal motivation.

Salat is a form of spiritual self-care and it is a fundamental principle for Muslims. It can be used to solve the daily problems of life, such as illness, anxiety, and depression. For Muslims, salat and praying to Allah SWT increases convenience instead of anxiety, stress, and depression. Thus, the biological response in the form of the modulation of their immunity will promote the patient's health as well (Rezaei, Adib-Hajbaghery, Seyedfatemi, & Hoseini, 2008 ; Saniotis, 2015 ; Yusuf, Nihayati, Iswari, & Okviansanti, 2017). According to the Islamic principle, Muslims should perceive salat as an obligatory order even when in a critical condition (illness) (Kurniawati, 2017).

The nurse plays a series of important roles, such as reviewing the patient, giving the intervention (supporting religious activities), and cooperating with the spiritual counselor as a part of fulfilling the patient's needs (Yusuf et al., 2017). Individual coaching consists of five stages, namely reviewing, educating, training, motivating, and evaluating all of the activities regarding spiritual self-care between the medical staff and spiritual counselor. The education and training stages will increase spiritual well-being, as well as spiritual self-care (White et al., 2011 ; Hasanshahi & Mazaheri, 2016).

The existence of individual coaching influences the difference between the control and treatment groups. The influence of individual coaching towards self-action (attitude) can be achieved through education, personal motivation, and training regarding the implementation of salat during treatment in the hospital. Hence the collaboration between the nurse and spiritual counselor is highly important in terms of promoting patient health.

Coaching helps the patient to transform behavior into health and welfare promotions as a part of motivating their mental condition. The researcher and spiritual counselor are collaborating to deliver the information and education regarding the implementation of salat when in a critical condition (illness), in addition to the ritual purification practice (Wudu), personal motivation, and self-control. The patient is facilitated by the provision of Tayammum dust and a spray for Wudu. As a consequence, individual coaching is essential for helping the patient to fulfill their spiritual needs (the practice of salat).

The limitations in this study are the characteristics of the patient regarding the patient's understanding related to hadith prayers not having been examined. The research sample is limited but the characteristics of Muslims in Indonesia are the same, so there is little bias.

CONCLUSION

There is an improvement in the spirituality of Muslims (knowledge, attitude, and practice of Salat) in a state of illness or a critical condition after receiving individual coaching. The nurses in the hospital are expected to provide coaching as a nursing intervention and to cooperate with a spiritual counselor as a part of helping the inpatient to perform salat.

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Original Research

The Effect of Health Promotion Intervention on Anemia Prevention Behavior and Haemoglobin Level in Pregnant Women: Based on Health Promotion Model and Self-Determination Theory**Mira Triharini¹, Agus Sulistyono², Merryana Adriani³, and Shrimarti Rukmini Devy³**¹ Faculty of Nursing, Universitas Airlangga, Indonesia² Dr. Soetomo General Hospital Surabaya, Indonesia³ Faculty of Public Health, Universitas Airlangga, Indonesia**ABSTRACT**

Introduction: Anemia during pregnancy has an impact on pregnancy and fetus. Pregnant women who have low iron status can affect the development of nerves and behavior of children. Low self-determination in pregnant women will affect the commitment to prevent anemia. The objective of the study was to analyze the effect of Health Promotion Model and Self Determination Theory Based Intervention on anemia prevention behaviors and hemoglobin level in pregnant mothers.

Methods: This research was a quasi-experiment research with a pre- and post-test using a control group design. The samples were 30 pregnant women who did antenatal care in Community Health Center of Tanah Kali Kedinding Surabaya. Intervention through health education about anemia in pregnancy, family support and self-determination was held 3 times consisting of 1 meeting with health professionals, 1 meeting with pregnant mothers, and 1 meeting with pregnant women and their families through home visits. Data were collected using questionnaires that consist of adherence to iron supplementation and behavioral prevention of intestinal worms, food recall in 2x24 hours, and laboratory test for hemoglobin level. Paired T-test and Independent T-test was used to analyze data in this study.

Results: There was an effect of Health Promotion Model and Self Determination Theory Based Intervention to anemia prevention behaviors and hemoglobin level ($p = 0.013$; $p = 0.040$).

Conclusion: Health workers can use Health Promotion Model and Self Determination Theory Based Intervention to improve anemia prevention behavior.

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INTRODUCTION

Iron deficiency anemia is a major nutritional problem that occurs in many developing countries. In current study in Pakistan showed 65.4% pregnant women were anemic. On the basis of Hb level, 6.4% were severely anemic, 19.2% were moderately and 39.8% were mildly anemic (Hameed et al., 2018). From the data of the Indonesian Basic Health Research in 2018 found that 48.9% of pregnant

women in Indonesia were anemic (Ministry of Health, 2018). Anemia is considered to be one of huge public health challenge as population studies find that anemia prevalence is at 5.0% or higher (WHO, 2008). Anemia during pregnancy may cause health problems in pregnant women and fetuses (Huang, Purvarshi, Wang, Zhong, & Tang, 2015). Anemia is associated with the incidence of low birth weight in newborns (Aboye, Berhe, Birhane, & Gerensea, 2018). The behavior of pregnant women in the prevention of

anemia needs to be done through health promotion by looking at various internal and external factors of pregnant women. The Health Promotion Model (HPM) as a nursing theory may be used as a theoretical basis to help patients conduct healthy behaviors (Pender, 2011). Physical and psychological changes experienced by mothers during pregnancy will have an impact on their ability to make efforts to prevent anemia, so a behavioral model for prevention of anemia with self-determination is needed that forms a high commitment. Various health promotion efforts that have been carried out are expected to provide behavioral changes in pregnant mothers will last longer, if they are committed and have high intrinsic motivation from pregnant women themselves.

There are various factors that affect the incidence of anemia in pregnant mothers, namely inadequate antenatal care, close birth spacing, and poor nutrition (Singal, Setia, Taneja, & Singal, 2018). The current high incidence of anemia may be influenced by the low behavior of mothers in preventing anemia, such as do not take the iron supplement tablets regularly. Based on data from the Indonesian Basic Health Research in 2018, 61.9% of pregnant women in Indonesia consumed fewer than 90 iron tablets (Ministry of Health, 2018). Many pregnant women do not adhere in taking iron tablets because of the belief that iron tablets only need to be taken when they have health complaints. This was supported by studies of factors that influenced the adherence to iron tablets in pregnant women were the level of education and knowledge about anemia and iron tablets (Taye, Abeje, & Mekonen, 2015). Other studies showed that perceptions of benefits, barriers and family support affected maternal compliance in taking iron tablets (Triharini et al., 2018).

HPM is multidimensional which has an impact on health, individuals, environment and nursing. HPM also states that health behavior requires commitment based on cognition and affection factors. The concept of this model explain the uniqueness of individuals, families, and communities, as it explain the perceived benefits, perceived barrier and perceived self efficacy may influence individual's health behavior (Pender, 2011). This theory has been widely used in various research areas, for example a study had showed perceived benefits, perceived self efficacy, interpersonal influences, commitment to a plan of action have an effect on nutritional intake (Dehdari, Rahimi, Aryaeian, & Gohari, 2013). Commitment of pregnant women in anemia prevention behavior would be better if the mother has a strong self-determination. With a strong commitment, pregnant women will be able to overcome the barriers in preventing anemia.

In accordance with the Self Determination Theory (SDT), the behavior is expected to be able to last longer when the patient is able to internalize the value and achieve satisfaction with the fulfillment of three psychological needs in health services,

autonomy, competence, and relatedness (Patrick & Williams, 2012). SDT has been widely used in research to increase commitment and health behavior. Satisfaction with fulfilling psychological needs improves health behaviors for eating healthy foods (Ryan, Patrick, Deci, & Williams, 2008).

In an effort to increase the commitment of pregnant women to overcome the problem of preventing anemia, an intervention in the form of health education is needed based on the use of the HPM theory and SDT. This intervention is comprehensive because it involves several parties, who are expected to increase the commitment of pregnant mothers, including health professionals, pregnant mothers, families, and groups of pregnant mothers. The HPM and SDT model emphasizes several aspects, namely (1) the cognitive aspects of pregnant women, which include increasing perceived benefits, reducing the perceived barrier, and increasing self-efficacy; (2) the increase of environmental support, which includes health professionals, families and groups of pregnant mothers; (3) the increase of self-motivation for preventing anemia; and (4) the increase of the goal of pregnancy. There is no study conducted to explain HPM and SDT-based intervention to improve anemia prevention behavior. Hence, this study was aimed to explain the effectiveness of interventions using HPM and SDT on the prevention behavior of anemia and hemoglobin levels in pregnant women.

MATERIALS AND METHODS

This research used a quasi-experimental design with two groups, pre-test, and post-test, which were conducted from January to March 2018.

The population was pregnant women attending antenatal care at Puskesmas (the Community Health Center) of Tanah kali Kedinding in Surabaya, East Java, Indonesia. The inclusion criteria were pregnant women who were receiving iron supplementation from the Community Health Center. The exclusion criteria were those who did not have anemia based on an examination of the Community Health Center and with complication of diseases that required specific medical treatment. The samples that met the inclusion criteria were 30 mothers with 15 mothers for each group.

Data were collected using questionnaires, food recall in 2x24 hours, and hemoglobin level examination using the cyanmethemoglobin method. Qualified nutritionists conducted the food recall in pregnant women to carry out data collection on consumption patterns. Nutrition laboratory staff at Universitas Airlangga Surabaya carried out hemoglobin level examination using the cyanmethemoglobin method.

The questionnaires were focused on sociodemographic characteristics, and anemia prevention behavior. The sociodemographic characteristics of questions asked about age, parity,

education and income. The questions about anemia prevention behavior consisted of adherence to iron supplementation and prevention of intestinal worms. The questionnaires were developed by researchers with items based on the theory of prevention of maternal anemia and the health-promotion model (HPM) (Pender, 2011; Sharma & Shankar, 2010). While preparing the questionnaire contents, the researchers were assisted by two experienced nurses in the field of maternity nursing. Translation was accomplished by a qualified translator from Indonesia. Before being used in data collection, the compiled questionnaires had been tested for validity and reliability on 20 pregnant women who attended antenatal care at Community Health Center Keputih Surabaya.

Data collection on adequacy of energy, carbohydrates, protein, vitamin C, and iron of pregnant mothers was based on their age and gestational age. Measurements were made with a questionnaire with a 2 x 24 hour food recall method the results of which were expressed in calories, grams and mg, compared with the Recommended Dietary Allowance (RDA) (Ministry of Health, 2013). The questions on adherence to iron supplementation focused on four items: regularity, time, reducing and increasing absorption process. The questionnaire consisted of four questions. Each item was converted into a Likert scale with the following options: always, often, sometimes, rarely and never. The total scores for this section were in the range of 4–20, with higher scores indicating higher levels of adherence to iron supplementation. The validity of the questionnaire on adherence to iron supplementation had a Cronbach's α of 0.761

The questionnaire on behavioral prevention of intestinal worms consisted of two items: personal hygiene and environmental hygiene. Each item was converted into a Likert scale with the following options: always, often, sometimes, rarely and never. The total scores for this section were in the range of 6–24, with higher score indicating higher levels of behavioral prevention of intestinal worms. The validity and reliability test of the questionnaire on prevention of intestinal worms had a Cronbach's α of 0.831.

Paired T-test was used to examine the differences between the pre-test and post-test scores for both the intervention group and control group. Independent t-test was used to analyze the effect of Health Promotion Model and Self Determination Theory Based Intervention on anemia prevention behavior and hemoglobin level. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to describe sociodemographic characteristics. In all statistical analyses, a p-value of < 0.05 was considered significant. All data were analyzed using SPSS software.

After selecting respondents based on inclusion criteria, the researchers conducted a health education intervention on the topics of anemia prevention, self-determination and family support. Anemia

prevention material discusses the definition of anemia, the causes of anemia, the influence of anemia on pregnancy, and ways to prevent anemia, which includes procedures for taking iron tablets, dietary regulation, and prevention of intestinal worms. Self-determination material discusses three psychological needs of pregnant women that need to be fulfilled and self-motivation in preventing anemia. Family support material to prevent anemia includes the benefits of family support for pregnant women, forms of support given to pregnant women, and family support for pregnant women to have a strong determination in preventing anemia.

Intervention activities were held three times consisting of one meeting with health professionals, one meeting with pregnant mothers, and one meeting with pregnant women and their families through home visits. The first meeting was held for 1 x 60 minutes targeting health professionals with anemia health promotion to pregnant mothers. This meeting aimed to improve the understanding of health professionals about intervention. In this meeting, the researchers discussed the model of health education that needed to be provided based on HBM and self-determination, which aimed to increase the satisfaction of pregnant women in terms of psychological needs, including autonomy, competence, and relatedness. At the end of the session, the researchers gave the module to the health professionals.

The second meeting was held for 1 x 60 minutes targeting the pregnant women in groups. This meeting aimed to improve the perceived benefit and reduce perceived barriers according to the HPM theory, to improve the orientation and goals of maternal pregnancy in implementing anemia prevention behaviors according to the theory of self-determination, and to support the groups of pregnant mothers. The researchers conveyed material about the concept of anemia of pregnancy, ways to prevent anemia through nutrition, adherence with iron supplementation and prevention of intestinal worms, the role of support for pregnant women groups, and the concept of self-determination. The researchers applied the concept of communication by paying attention to fulfilling the psychological needs of the mother according to the SDT theory, which included the needs of autonomy, competence, and relatedness. At the end of the meeting session, pregnant women were asked to plan the actions to be carried out. They were also given a form to record the adherence to iron supplementation. The researchers provided leaflets about anemia in pregnancy. In a group meeting of pregnant women there was a meeting between multigravida with primigravida mothers. Researchers provided an opportunity for multigravida mothers to convey previous pregnancy experiences and as role models for other pregnant women. The positive thing expressed by mothers is trying to keep taking iron tablets according to the advice of the midwife so that the baby is healthy, even

though sometimes they feel bored and nauseous. Mothers stated that they were very happy when their labor was smooth and the baby was in good health. Primigravida pregnant women can study the past experiences of other pregnant women and achieve the motivation and goals of their pregnancy.

The third meeting was held for 1 x 60 minutes targeting the family members of pregnant women who lived at home. The purpose of this meeting was to increase family support to pregnant women in an effort to prevent anemia. The researchers delivered material about the concept of anemia, ways to prevent anemia, and the role of family support to pregnant mothers. The researchers also looked at the form of the results of record adherence to iron supplementation that had been made by pregnant women and discussed the obstacles that existed in carrying out prevention for anemia.

Post-test data collection was carried out after three months of intervention using questionnaires that consisted of adherence to iron supplementation and behavioral prevention of intestinal worms, food recall in 2x24 hours, and laboratory test for hemoglobin level.

Sampling was conducted after ethical approval from the health research ethics committee of the Faculty of Public Health, Airlangga University in Surabaya (No 123-KEPK).

RESULTS

Table 1 shows that the majority of respondents were aged 25-35 years, both in the intervention group (66.7%) and the control group (53.3%). The majority of respondents had one parity in the intervention group (40.0%) and nullipara in the control group (46.7%). More than half of the intervention group (88.0%) and control groups (53.3%) had income of < 3 million rupiahs. More than half of the intervention group (60.0%) and the control group (79.9%) had secondary education levels.

Table 2 shows that there is an increased mean score after an intervention in the intervention group on the nutritional adequacy (15.67 ± 4.49), adherence to iron supplementation (21.47 ± 1.19), and prevention of intestinal worms (29.93 ± 0.26). In the intervention group, the mean difference in nutritional adequacy score was 4.14, the difference in adherence to iron supplementation score was 1.20, and the difference in prevention of intestinal worms score was 0.40. The results of the t-test showed that p value < 0.05, indicating that there were significant differences of nutritional adequacy, adherence to iron supplementation and prevention of intestinal worms between before and after the intervention.

Table 3 shows that there is an increased mean score after an intervention in the intervention group on anemia prevention behavior (67.07 ± 4.74) and hemoglobin level (12.87 ± 1.04). In the intervention group, the mean difference in anemia prevention behavior score was 5.74. The results of the t-test

showed that p value $0.004 < 0.05$, indicating that there were significant differences of anemia prevention behavior between before and after the intervention. Data show an increased score in anemia prevention behavior between before and after intervention in the intervention group. The results of the independent t-test between the intervention and control groups after the intervention obtained p value $0.013 < 0.05$, which means that intervention influenced the anemia prevention behavior.

Table 3 shows that, in the intervention group, the mean difference in hemoglobin level score was 0.68. The results of the t-test showed that p value $0.025 < 0.05$, meaning that there were significant differences of hemoglobin level behavior between before and after the intervention. Data show an increase in hemoglobin between before and after the intervention. The results of the independent t-test between the intervention and control groups after the intervention obtained p value $0.040 < 0.05$, which means that intervention influenced the hemoglobin level.

DISCUSSION

Interventions based on HPM and SDT influenced the anemia prevention behavior and hemoglobin level. Anemia prevention behavior was measured by three indicators including: (1) Consumption of energy, carbohydrates, protein, vitamin C, iron; (2) Adherence to iron supplementation (3) Intestinal worm prevention behavior. In this study, the results show that, after interventions based on HPM and SDT, there was an increase in the mean score on anemia prevention behavior and hemoglobin levels in the intervention group. There was a significant difference in anemia prevention behavior and hemoglobin level between before and after the intervention. This intervention may increase the self-determination of pregnant women so that they have a strong commitment to conduct behaviors to prevent anemia properly.

Pre-test scores on nutritional adequacy showed low results because there are still many pregnant women who are still in the deficit category based on food recall results. The cause of this is possible because there is still a lack of knowledge of mothers about the importance of adequate nutrition during pregnancy, so that pregnant women do not pay attention to the adequacy of their daily nutritional needs. This is supported by the number of respondents who have elementary education. Economic factors also affect the ability of mothers to meet nutritional adequacy, where most respondents have an income of less than 3 million rupiah. This is supported by other research that shows there are many factors that affect the nutrition of pregnant women. Socioeconomic factors (education level, employment status, monthly income, household

Table 1. Distribution of both groups regarding their sociodemographic characteristics

No	Variable	Intervention		Control		P value
		n	%	n	%	
1	Age (yrs)					0,156
	< 25	4	26.7	4	26.7	
	25-35	10	66.7	8	53.3	
	>35	1	6.7	3	20.0	
2	Parity					0,092
	0	5	33,33	7	46.7	
	1	6	40,00	4	26.7	
	2	2	13.3	4	26.7	
	3	2	13.3	-		
3	Income (Rupiah) ^a					0,275
	<3 million	12	80.0	8	53.3	
	≥ 3 million	3	20.0	7	46.7	
4	Education level					0,455
	Elementary	5	33.3	3	20,1	
	Secondary	9	60.0	12	79.9	
	University	1	6.7	-		

^a13.500 Rupiahs equal to 1 US Dollar (US\$)**Table 2.** Distribution of intervention and control group regarding indicator of anemia prevention behavior in pre-post intervention

Anemia prevention behavior	Group	pre test (mean ± SD)	post test (mean ± SD)	Mean differences	P value
Nutritional adequacy	Intervention	11.53 ± 5.33	15.67 ± 4.49	4.14	0.019
	Control	14.73±4.18	15.93±3.41	1.20	0.389
Adherence to iron supplementation	Intervention	20.27 ± 0.96	21.47 ± 1.19	1.20	0.003
	Control	19.20±2.54	18.87±1.41	-0.33	0.642
Prevention of intestinal worms	Intervention	29.53±0.52	29.93±0.26	0.40	0.009
	Control	29.53 ± 0.52	29.93 ± 0.26	0.40	0.009

Table 2. Distribution of intervention and control group regarding indicator of anemia prevention behavior in pre-post intervention

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Nutritional adequacy	Intervention	11.53 ± 5.33	15.67 ± 4.49	4.14	0.019
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Adherence to iron supplementation	Intervention	20.27 ± 0.96	21.47 ± 1.19	1.20	0.003
	Control	19.20±2.54	18.87±1.41	-0.33	0.642
Prevention of intestinal worms	Intervention	29.53±0.52	29.93±0.26	0.40	0.009
	Control	29.53 ± 0.52	29.93 ± 0.26	0.40	0.009

assets and land ownership) have been shown to influence dietary diversity (Kiboi, Kimiywe, & Chege, 2017). There are still many pregnant women with insufficient nutrition. The result revealed that the caloric intake was below the RDA (85%), while calcium, iron, vitamins A, E, C and folate intake were respectively 28%, 47%, 25%, 9% 31% and 44% (Yetunde & Olubukunola, 2015). The presence of deficits in adequate iron was also caused by the irregularity of the mother in taking iron tablets. Iron requirements during pregnancy were not enough to only be filled with daily food, but also must be added with iron tablet supplements. In this study, it was found that some pregnant women do not regularly take iron tablets because they feel side effects after

taking them, forget and get bored because you have to drink them every day.

The results showed that there was an increase in post-test scores on the adequacy of nutrition in the intervention group. In the post-test data, it was found an increasing adequacy of protein and iron. A good intake of iron needs showed the adherence of iron supplementation. Some pregnant women who had experienced insufficient energy, carbohydrates and vitamin C would have a risk of anemia. This is supported by the results of related research that women with anemia show a low adequacy in energy, protein, folate, B12, iron, vitamin C and red meat (Thomson et al., 2011). Related research stated that there were several factors that influence the nutrition

intake of pregnant mothers, namely gestational age, education, and family income (Wang et al., 2015). In this study, more than 50% of respondents had secondary level of education and had income < 3 million. This could be an obstacle for some pregnant women to be able to make changes in their nutrition intake.

Nutrition during pregnancy is very important for fetal development and long-term health in infants. Malnutrition and obesity during pregnancy may affect the condition of fetal development, growth and development of childhood and the risk of developing chronic diseases in adults (Imdad, Lassi, Salaam, & Bhutta, 2017).

Pre-test scores on adherence to iron supplementation have a low score. Some pregnant women still stated that they had not routinely taken iron supplementation because of forgetfulness and nausea. This was supported by other studies about the causes of non-compliance of iron tablets in pregnant women, which are access to iron tablets, forms of vitamins, side effects, fear, forgetful behavior and feeling no need (Galloway et al., 2002).

Post-test scores on adherence to iron supplementation increased after the intervention. To improve adherence to iron supplementation in this study, a mother was given a monitoring card for iron supplement. Families who have received health education about prevention of anemia may help monitor the regularity of pregnant women in taking iron supplements. Material about preventing anemia was also given to families so that they understood the importance of preventing anemia for pregnant women and provided support.

In this intervention, the adherence to iron supplementation was also improved by providing information about the community's inappropriate perception of iron supplements. Some inappropriate perception of iron supplements might cause obese babies and babies with disability, high blood pressure, or iron tablets consumed only when having health complaints. The correct understanding about wrong perceptions will increase compliance in taking iron supplements. A way to minimize forgetfulness in taking iron supplements is by increasing support of the family by reminding pregnant women to take iron tablets regularly. Families also need to monitor whether pregnant mothers have taken iron tablets properly. To improve the family's ability to provide the support, this intervention also provides health education to families about prevention of anemia in pregnancy. The form of family support for pregnant mothers can be in the form of information support, emotional support, and instrumental support. Information support can be provided by reminding pregnant women to take iron tablets regularly, have food that is nutritious and high in iron, and maintain hygiene. Giving time to listen to their complaints and giving them encouragement can give emotional support. Instrumental support can be given by giving them direct support, such as helping them with homework.

Most pregnant women had regularly taken iron supplementation of one tablet per day, but there were still many of them consumed it in an inappropriate manner so it was not absorbed optimally. They took iron supplements before tea, coffee and milk. Some of them also did not understand that orange juice could be taken to reduce nausea after taking iron supplements. Understanding the needs of pregnant mothers should be improved through health education. Most pregnant women understood the importance of taking iron supplementation regularly, but they did not understand how to take it properly. The status of iron in the human body depends on the absorption of iron in food. Iron absorption may be increased through sources of vitamin C, such as oranges, papaya and certain animal protein sources, such as beef, chicken and fish. Vitamin C helps absorb non-heme iron by changing the shape of ferrous into ferro, which is easily absorbed. Conversely, iron absorption may be inhibited by several inhibitors, including caffeine, tannin, oxalate, and phytate, which can be found in soy products, tea and coffee (Masthalina, Laraeni, & Dahlia, 2015).

The result of the study on the intestinal worm prevention behavior was an increase in scores in the intervention group compared to the control group, but the percentage change in scores in the intervention group was very small. On average, pregnant women have a good behavior in preventing anemia through maintaining personal and environmental hygiene. This shows that the behavior of maintaining cleanliness has become a habit of pregnant women and their family. Behavior in preventing intestinal worms is related to hemoglobin levels of pregnant mothers. This is supported by several studies. There is a significant relationship between the incidence of worm infections with low iron reserves in the body in pregnant women (Baidoo, Tay, & Abruquah, 2010).

Prevention of intestinal worms can be done by wearing sandals when going out of the house, washing hands before eating, washing vegetables and cooking them well, cleaning the floor of the house every day, using clean water for daily drinking purposes, and using a toilet to defecate. At present, there is no worm-screening program for pregnant mothers, so it will be difficult to know whether they have worms or not. Taking precautions against intestinal worms are the best thing to anticipate worms in pregnant mothers.

In the results of research on hemoglobin in pregnant mothers, there were significant differences between before and after intervention in the treatment group. The difference in hemoglobin value in the treatment group was 0.68 during the 3-month intervention in pregnant mothers. There are many factors that may affect hemoglobin levels, so it's quite difficult to get a large enough increase. Iron reserves in the body are affected by the absorption and loss of iron. Iron absorption is affected by food intake, while iron loss is affected by menstruation, pathological factors and worm conditions (Sharma & Shankar,

2010). This is supported by the results of research related to nutritional interventions that increase hemoglobin levels in pregnant women in the 2nd to 3rd trimester by 0.35 points (Al-tell, El-guindi, Soliman, & El-Nana, 2010).

The study showed that the Health Promotion Model and Self Determination Theory-based intervention may improve anemia prevention behaviors and hemoglobin level. According to Self Determination Theory (SDT), the expected behavior will be able to last longer if the patient is able to internalize the values and get satisfaction with the fulfilment of the three psychological needs in health services, autonomy, competence, and relatedness (Gebremedhin, Samuel, Mamo, Moges, & Assefa, 2014). SDT theory is a framework in health services that focuses on patient care (Podlog & Brown, 2016). In this study, SDT was applied to increase the commitment of pregnant women to implement anemia prevention behaviors. Increased autonomy was given by achieving the freedom to prevent anemia in accordance with the wishes and abilities possessed. Competency enhancement was given by providing health education to improve perceptions of benefits and reduce perceptions of barriers among pregnant mothers. Increased attachments were given with the involvement of families, health professionals and groups in providing support to pregnant mothers. The Health Promotion Model theory is used to predict factors that influence health behavior, which, in this case, emphasizes that health behavior may be influenced by the commitment of pregnant mothers (Pender, 2011). This intervention might identify the commitment of pregnant women and the factors that influence them in carrying out anemia prevention behavior.

Obstacle perceptions will be experienced by pregnant women in carrying out anemia prevention behaviors, both in terms of nutrition fulfilment, compliance with taking iron tablets, and prevention of intestinal worms. Barriers perceived by the mother will reduce the behavior of pregnant women in preventing anemia, so this intervention also aims to provide understanding to pregnant women about the obstacles that can be found in the prevention of anemia and efforts that can be done to overcome them. Obstacles that women feel in preventing anemia include nutritious foods that are expensive, iron tablets can cause nausea, iron tablets that must be taken every day during pregnancy cause boredom and forgetfulness, and washing hands and using footwear when going out is a nuisance.

This intervention emphasized the self-determination of pregnant women in carrying out anemia prevention behaviors. Health education delivered to pregnant women to increase self-determination was to explain three psychological needs of pregnant women, namely (1) autonomy or feeling free in carrying out pregnancy care, being free in making their own choices and decisions to take anemia prevention measures; (2) competence or feeling confident that they were able to prevent

anemia by increasing their knowledge; and (3) relatedness or feeling close to family, friends and health professionals.

The limitation of this study is that the selection of respondents did not address the condition of other chronic infections that can influence hemoglobin levels in pregnant women. The recommendation in future study is to examine serum transferrin to determine the condition of anemia in pregnant women.

CONCLUSION

Interventions based on HPM and SDT influenced the anemia prevention behavior and hemoglobin level. This intervention involves pregnant women, peer group and families. Increased understanding of anemia will increase support, which strengthens self-determination in pregnant women. Self-determination of pregnant women can strengthen commitment to prevent anemia. Behavior to prevent anemia includes consumption patterns, adherence to taking iron supplements, and prevention of intestinal worms. Consumption patterns include consumption of energy, carbohydrates, protein, vitamin C and iron. Efforts to prevent anemia through these three things carried out simultaneously will be able to increase the hemoglobin level of pregnant mothers. Health workers can implement interventions based on HPM and STD in an effort to increase the determination of pregnant women to strengthen commitments in anemia prevention behavior. Health education provided to pregnant women also needs to involve peer groups and families so that they can provide support.

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Original Research

EFFECT OF HEALTH LECTURE USING MEDIA AND PEER-EDUCATION ON LONG ACTING AND PERMANENT METHODS OF CONTRACEPTION**Helen Ermalia¹, Jimmy Yanuar Annas², Samsriyaningsih Handayani³**¹ Midwifery Education Program Study, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia² Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Airlangga, Surabaya Indonesia³ Department of Public Health and Preventive Medicine, Faculty of Medicine, Universitas Airlangga, Surabaya Indonesia**ABSTRACT**

Introduction: Long-acting and permanent methods of contraception (LAPMs) are known as highly-effective contraception. The Department of Health of East Java Province stated that LAPM participation is still below target. One of the factors is the Interpersonal Communication (IPC) skill of the Health Practitioners. This study aimed to identify the influence of health lectures using media and peer-education on the knowledge and attitude of pregnant women regarding LAPMs. Peer-education is the novelty of this study.

Methods: A two-group quasi experimental design was applied with all of the pregnant women at Kesugihan Public Health Center (PHC) as the treatment group. They were given lectures with media inclusion (contraception booklets and visual aids) and peer-education during a pregnancy class. Pregnant women at Ngebel PHC were the control group. One woman who had experience with LAMPs was trained as a peer-educator. Thirty participants in each group were chosen using the total sampling technique. The data collected was analyzed using univariate and bivariate analyses by applying the Wilcoxon Signed-Rank and Mann-Whitney tests.

Results: The participants showed an increased knowledge before and after the intervention in the treatment group (83%), while in control group, it was slightly increased (1%). Attitude differences were also found in both groups (treatment = 56.7%, control = 13.3%). The Mann-Whitney test resulted in significant differences on knowledge ($p < 0.001$) and attitude ($p = 0.016$) between the two groups.

Conclusion: The local department of health may optimize IPC using media and peer-education to improve the knowledge and attitude of pregnant women regarding LAPM participation.

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INTRODUCTION

Long acting and permanent methods of contraception (LAPMs) are known to be highly effective (Kemenkes, RI, 2013), with a low rate of failure and more benefits compared to other methods of contraception (Hartanto, 2010). LAPMs are contraception methods that can be used from 3 years up until a lifetime. These include intrauterine devices, hormonal implants, female sterilization and

vasectomies (Affandi, 2012). The Department of Health of East Java Province revealed that LAPM participation is still below target. The data shows that only 22.4% of women use LAPMs from 5,576,723 as the total number of active contraceptive users.

LAPMs are promoted by the government as an effort to lower the rate of population growth (BKKBN, 2016). The improper treatment of population growth will result in a population

explosion which can lead to a negative impact on the demography. Several issues that have impacted on the negative side of demography bonuses are less jobs for citizens, unemployment problems, a low education rate, severe social effects and a loss of momentum when it comes to money-saving, leading to extreme poverty (Kominfo, 2014). Health problems will also emerge, specifically for mothers and children (Kemenkes RI, 2016). The increase in LAPM participation can be the solution to preventing further problems. Despite this fact, many factors are involved in LAPM participation such as culture, society, the economy, educational background, health facilities and Family Planning Programs. This is in addition to health practitioner-related issues (Shodiq, 2016).

The role of health practitioners is essential especially during health education and interpersonal communication (HIC) related to LAPM participation (Hartanto, 2010). Media presence and interactive messages can affect health education (Notoatmodjo, 2010), contributing to the success rate of contraceptive use (Hartanto, 2010). Most of the HIC conducted by health practitioners is interpersonal counseling focused on the contraception candidate acceptor (Kemenkes RI, 2014). In this study, using peer-education as a novel method to introduce contraception, we sought to determine the importance of proper health education. This research thus aimed to analyze the influence of media usage and peer-education on the knowledge and attitude of pregnant women related to LAPM participation.

MATERIALS AND METHODS

The locations of this research study were 2 pregnancy classes in Kesugihan Public Health Center (PHC) and Ngebel Public Health Center, Ponorogo region. The research design for this study was quasi-experimental with a non-randomized control group pretest-posttest. The population of this study was all of the pregnant mothers in Kesugihan PHC as the treatment group and those in Ngebel PHC became the control group. The study variables were knowledge and attitude toward LAPMs among pregnant women. A total of 30 participants for each group were calculated using the Federer formula and they were chosen using non-probability sampling as the total sampling technique. All of the pregnant women were chosen as the sample based on the selected inclusion criteria i.e. registered to a pregnancy class, spoke Bahasa Indonesia and they had graduated from middle school. Pregnant mothers with a pathological history and who had experienced an obstetric emergency were excluded from the study. The intervention applied consisted of

a 45-minute lecture, media (booklet) distribution that had previously been tested for its clarity and a 45-minute session of peer-education by a trained woman who had experience with LAPMs. The media (booklet) was written by the National Family Planning Board (BKKBN) and it was tested for clarity. Some modifications to the booklet were applied following the test results. The peer-educator was trained to share her experience guided by a list of topics. The intervention ended with a discussion. The data was collected by giving pre- and post-tests for both groups during a pregnancy class. The post-test was conducted at the end of the session. The pre- and post-tests were conducted on the same day without a recess. The questions in the pre- and post-tests were tested for reliability and validity. The overall Cronbach's alpha for the 8 questions on knowledge were 0.644 and the coefficient for the 8 questions on attitude was 0.958. The validity test using the Pearson product moment correlation revealed coefficients from 0.376 to 0.612 for the 8 questions on knowledge and 0.725 to 0.981 was found for the 8 questions on attitude. The data was analyzed using univariate and bivariate analyses. The Wilcoxon signed-rank test was used to analyze the difference in knowledge levels and the attitude before and after treatment in each group. The Mann Whitney test was conducted to analyze the difference in their increased knowledge and the altered attitudes between the groups. Ethical clearance was obtained from the Ethical Committee on Health Research of the Medical Faculty of Universitas Airlangga number 331/EC/KEPK/FKUA/2017 and the Badan Kesatuan Bangsa dan Politik of Ponorogo District number 0721/01/405.30/2017.

RESULTS

The participants' Characteristics within the Control and Intervention Groups are as shown in Table 1. Table 1 showed that the respondents from both groups had similar characteristics. The knowledge and Attitude Scores of the Control and Intervention Groups are as shown in Table 2.

The Wilcoxon signed-rank test resulted in a p of 0.00 ($p < 0.01$) showing a significant knowledge difference before and after the intervention in the treatment group. The Wilcoxon signed-rank test resulted in a p of 0.317 ($p > 0.05$) for the control group, thus showing no difference between the pre-test and post-test. The Wilcoxon signed-rank test resulted in a p of 0.000 ($p < 0.05$), indicating a significant attitude difference in the treatment group before and after the intervention and a $p = 0.102$ ($p > 0.05$), suggesting no attitude difference in the control group.

Table 1. Participants' Characteristics in the Control and Intervention Groups

Variable	Control Group		Treatment Group		n		p
	n	%	n	%	n	%	
Age							
20-30 years-old	19	63.3	16	53.3	35	58.3	0.510
31-40 years-old	11	36.7	14	26.7	25	41.7	
Total					60	100	
Education							
Middle School	14	46.7	13	43.3	27	45	0.417
High School	13	43.3	13	43.3	26	43.3	
College	3	10	4	13.4	7	11.7	
Total					60	100	
Occupation							
Unemployed	16	53.3	22	73.3	38	63.3	0.825
Employed	14	46.7	8	26.7	22	36.7	
Total					60	100	
Gravida							
Primigravida	5	16.7	6	20	11	18.3	0.221
Multigravida	25	83.3	24	80	49	81.7	
Total					60	100	
Child alive							
Nullipara	7	23.3	8	26.7	15	25	0.266
1 child	18	60	16	53.3	34	56.7	
2 children	5	16.7	6	20	11	18.3	
Total					60	100	
Postpartum contraceptive plan							
Permanent	2	6.7	4	13.3	6	10	0.495
Spacing the pregnancy	5	16.7	26	86.7	31	51.7	
Postpone the pregnancy	23	76.7	0	0	23	38.3	
Total					60	100	
Contraceptive Participations history							
At least once	23	76.7	22	73.3	45	75	0.896
None	7	23.3	8	26.7	15	25	
Total					60	100	
History of Contraceptive methods							
LAPMs	7	23.3	4	13.3	11	18.3	0.663
Non LAPMs	16	53.4	18	60	34	56.7	
No history of contraceptives	7	23.3	8	26.7	15	25	
Total					60	100	
Reasons to withdraw contraception							
Unmet need	2	6.7	3	10	5	8.3	0.618
Planning for pregnancy	21	70	16	53.3	37	61.7	
Side effect	0	0	1	3.3	1	1.7	
Others	0	0	2	6.7	2	3.3	
No history of contraception	7	23.3	8	26.7	15	25	
Total					60	100	

The Mann Whitney test resulted in a p of 0.000 ($p < 0.01$) concerning the influence of media usage and peer-education on the participants' knowledge related to LAPM participation. It showed there to be a significant difference in knowledge increase between the control and treatment groups. The Mann Whitney test resulted in a p value of 0.016 ($p < 0.05$) for the attitude difference between the control and treatment groups.

DISCUSSION

The knowledge of the pregnant mothers in the treatment group showed a statistically significant increase after the intervention which proved that the information delivered likely affected the cognitive level of the individuals (Maulana, 2009). The pre-test, intervention and post-tests were conducted on

the same day without recess. This did not give the participants a chance to gain knowledge from sources other than the intervention itself. It thus explained the knowledge difference that resulted from media usage and peer-education related to LAPM participation between the control and treatment groups, which proved effective. This result was also similar to that of a previous study which found there to be an increase in the participants' knowledge regarding the use of IUDs after an audiovisual intervention among women of a reproductive age (19.49%) (Ratnawati, 2016). Despite the different media utilization, the stated findings supported the idea that better knowledge regarding contraceptive methods occurred after the media interventions. However, peer-educations

among pregnant woman was a novelty so it cannot be compared to the other studies' results.

because by giving a health lecture related to LAPMs, the participants in the intervention group became

Table 2 - Knowledge and Attitude Scores of the Control and Intervention Groups

	Intervention Group		Control Group	
	<i>Pre-test</i>	<i>Post-test</i>	<i>Pre-test</i>	<i>Post-test</i>
Knowledge				
Mean	58.33	87.08	70.41	69.16
Standard deviation	20.59	9.56	17.21	18.49
Median	56.25	87.5	75	75
Mode	37.5	87.5	75	75
Attitude				
Mean	53.83	57	47.33	47.71
Standard deviation	6.17	7.30	11.50	11.56
Median	57.3	59.57	48.24	49.37
Mode	59.6	61.64	48.24	57.31

Another study also found there to be similar results concerning attitude difference regarding family planning programs before and after the intervention (Mahamed & Parhkizar, 2012). An attitude difference was found in the treatment group. On the contrary, the control group showed there to be no significant difference between pre-test and post-test. Booklets have a great impact in terms of creating judgments and beliefs in individuals. Information from the media forms a cognitive foundation for attitude construction (Azwar, 2013). If such particular information experiences a strong retention inside someone's mind, then it is likely to contribute as an affective foundation for constructing judgment as part of a brand new attitude. This may result in a certain attitude towards something. In this study, this attitude is related to positive intention in terms of LAPMs participation. As the pre-test, intervention and post-test were conducted on the same day without any chances for the participants to interact with the outer world, it can be concluded that the intervention was solely responsible for the improved attitude.

A difference in the knowledge levels among the pregnant mothers regarding LAPMs was found between the control and treatment groups in this study. Another study also stated that interpersonal counseling (IPC) affected the women's knowledge related to contraceptive methods (Mahamed & Parhkizar, 2012). Another study in Haiti showed that a peer-education intervention increased the knowledge on short-term contraceptives among women (Loh, 2015). The result of knowing something is essential to finding out the answer to particular issues. Knowledge is the result after a sensory process related to an object or issue occurs. It then constructs judgment, understanding and actions (Potter & Perry, 2009). The stated theories and the results of this study indicate that giving a lecture paired with media usage and peer-education has a positive impact when it comes to increasing the knowledge related to LAPMs. Such a thing is possible

knowledgeable which can then be reflected in their mind, increasing their knowledge. Things were different in the control group where no intervention was given. No additional lecture about LAPMs meant that there was no new knowledge.

This study also showed there to be a significant difference in attitude between the control and treatment groups. This result was supported by a previous study which also found there to be an attitude difference in treatment group after being counseled on the family planning program and contraceptive methods (Mahamed & Parhkizar, 2012). Another study in Shanghai showed similar results after there was an intervention using booklets about health education in nulliparas. The participants' had a contraception choice post-intervention, whereas previously they did not have a choice (He, et al., 2017). There are 3 main components in attitude, with the cognitive factor being one of them. The cognitive component creates ideas that are trusted and that fit with the attitude. According to Mann (1986), the cognitive factor comes from the perception and belief on what we call opinion and perception that is derived from several sources (Azwar, 2013). Compared with the theory stated by Azwar, the results of this study show that the treatment group experienced proper information retention which means that they can construct positive opinions which improve the participants' attitude. On the contrary, with no intervention given in the control group, there was no opinion created as a part of developing a particular attitude related to LAPM participation. Another factor that made the participants not support the attitude change was the fear of using LAMPs. Another study in Ethiopia showed similar results, i.e. the participants' in the study had no desire to use implants because inserting and pulling them out was a painful process (Meskele & Mekonnen, 2014). The success of this study should not be separated from the provision of the intervention. The peer-education given by the woman who used LAMPs provided new insights for the participants.

CONCLUSION

This study suggests that knowledge and attitude improvements can be achieved through a combination of lectures, media use and peer-education. Primary health centers are encouraged to apply this education method for better results. The longer term effects of such education need to be checked regularly in the community as knowledge levels and attitude may be affected by time as well as by other members of the community..

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Original Research

Diabetic Foot Spa Implementation in Early Neuropathy Diagnosis Based on Blood Glucose Levels, Foot Sensitivity and the Ankle Brachial Index in Patients with Diabetes Mellitus**Erika Martining Wardani, Chilyatiz Zahroh and Nur Ainiyah**

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ABSTRACT

Introduction: Diabetes Mellitus (DM) is a cause of morbidity mainly due to vascular complications. The prevention of diabetic foot problems can be done through metabolic control and foot exercises. The purpose of this study was to determine the effect of diabetes foot spa measures on blood glucose levels, foot sensitivity and the ankle brachial index.

Methods: This research was a pre-experimental design. The population totaled 170 DM patients and the sample was finalized at 30 respondents. The independent variable was diabetic foot spa, while the dependent variables were blood glucose levels, blood sensitivity and the ankle brachial index. The data was analyzed using a t-test and Wilcoxon rank test.

Results: Diabetic foot spa in early neuropathy detection testing has a blood glucose level of $t=9.523$ and a p value $=0.000$. Diabetic foot spa also significantly affects foot sensitivity with a $p < \alpha$ ($0.001 < 0.05$) and an ankle brachial index of (ABI) $p < \alpha$ ($0.008 < 0.05$).

Conclusion: Diabetic foot spa conducted regularly and independently can reduce the level of complications in Diabetes Mellitus patients. Furthermore, the tingling and pain in the feet can be reduced or even disappear as well as preventing complications such as foot ulcers that can often become amputations.

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INTRODUCTION

Diabetes Mellitus is one of the metabolism disorders that is very common in the world. Urbanization has led to histrionic changes in lifestyle, especially in developing countries with rapid transitions along with an increase in the risk factors of non-communicable disease such as DM. Diabetes Mellitus type 2 can cause various complications for the patients, either acute or chronic. The chronic complications that can occur include motor neuropathy and vascular peripheral disease. Almost 60% of patients suffer from these complications (Black & Hawks, 2014).

Complications can cause an obstruction of blood flow to organs via microangiopathy and macroangiopathy (Smeltzer & Bare, 2001). DM patients with gangrene often require amputations. DM patients have a higher chance of experiencing

lower leg amputations; up to 15 times more than those without DM (Greenstein & Wood, 2010). The International Diabetes Federation has shown that 382 million people are suffering from DM to date. The amount will increase to become 592 million people in 2035. Out of this amount, 175 million people are unaware of their condition. More than 80% of ailed people are living in a low earning country and are from the middle class.

The incidence of DM in the age range of 40 - 59 years old in 2014 reached 387 million people. This number is expected to increase to 529 million by 2035 (International Diabetes Federation) [IDF, 2013]. According to (IDF, 2013), there are 9.1 million DM cases in Indonesia. The high rate of DM in Indonesia has positioned Indonesia as having the largest number of DM cases in the world after China, India, Brazil, and the United States (IDF, 2013).

Based on the 2012 Annual Hospital Report, the largest number of outpatients (as of May 31st, 2013) in type B and C hospitals in East Java was for DM (137,427 cases). The highest number of inpatients in hospitals B and C was for DM (17,990 cases) (Risesdas, 2018). DM in Surabaya has seen an increase in the number of cases from 15,961 in 2009 to 21,729 in 2010. Then it increased to 26,613 in 2011. Thus, the number of DM patients has increased from 2009 - 2011. In 2012, it increased to 21,268 cases (Risesdas, 2018).

Diabetic foot prevention can be done through metabolism control that places an emphasis on nutritional status, blood glucose levels, vascular control by doing foot exercises and non-invasive vascular examinations such as the ankle brachial index, toe pressure, and ankle pressure checks regularly. This is as well as the modification of the risk factors such as quitting smoking and putting on special footwear (Ganong, 2008).

There are various ways to prevent, cure, and control the complications that are a part of DM characteristics (Tang, et al., 2013), manage stress, because stress can increase glucose level (Bistara, et al., 2019) and dietary compliance (Bistara & Ainiyah, 2017). Foot treatment for DM patients can prevent the risk of diabetic foot ulcers (Mahfud, 2012). Foot care or foot treatment is one factor which can affect peripheral blood circulation. Diabetic foot spa is a foot care series in which the activities include foot exercises, warm water cleansing and massage (Purwanti, 2013). Regular foot care can reduce the number of amputations by around 50% (Windasari, 2015). This is according to the program of DM control in Indonesia, which is focused on controlling the risk factors to reduce the number of illnesses, deformity and death that are caused by DM (PERKENI, 2011).

Related research with the title 'The effect of foot exercises on the blood glucose level of Diabetes Mellitus patients type II'. This was conducted in Cawas public health center with the result that there is an effect from foot exercises on the blood glucose level of the Diabetes Mellitus type II patient (Eraydin & Avsar, 2017).

Warm water therapy is useful to improve blood circulation, to reduce muscle tone stiffness, to activate relaxed feeling and to stimulate the nerve endings to create a refreshing feeling (Suandika, 2016). Warm compress also as pain release (Zahroh & Faiza, 2018). This study has the purpose of determining the effect of diabetic foot spa actions on blood glucose levels, foot sensitivity and the ankle brachial index.

MATERIALS AND METHODS

The design of this study was a pre-experiment, which the researcher measures blood glucose levels, foot sensitivity, Ankle Brachial Index (ABI) scores before and after the Diabetic Foot Spa intervention. The population of this research totaled 170 respondents. The samples were obtained through probability

sampling (*simple random sampling technique*) focused initially on 30 respondents. The blood glucose level measurement, foot sensitivity, and ABI score was taken before and after the intervention. The patients with DM type II were from Waru Health Center Sidoarjo.

The data process began from taking permission to conduct the research. To determine the neuropathy diagnosis, the researcher used the medical record available from the public health center. The number of samples used in each intervention and control group totaled 30 people who met the inclusion criteria, namely type 2 DM patients who did not have lower limb complications such as diabetic ulcers, no broken bones in the legs, in the age range of 41 - 60 years old, with a blood glucose level that was less than 600 mg%, where they had had Diabetes Mellitus for less than 5 years, and where they had no chronic disease.

The diabetic foot spa consists of various activities such as diabetic foot exercises before the foot spa is conducted, skin cleansing using the gentle and light baby bath soap, a pedicure if the respondents have long nails, cutting and scraping their nails and a foot mask by applying a scrub to clean off the dead skin cells. However, this cannot be done every day due to avoiding the skin from becoming slither. A foot massage is a superficial massage of the foot for the purpose of increasing the circulation of the blood. The last step is applying a moisturizing cream to the skin. This is useful for avoiding dry skin. The diabetic foot spa was done \pm 30 minutes over 3 days consecutively in the group treatment (Wardani, et al., 2019).

The implementation of the spa for diabetic feet began with diabetic foot exercises with the aim of making the blood circulation smooth. The activity is then continued by soaking the feet in warm water at a temperature of 40-41°C. Moreover, a sphygmomanometer was used to measure the Ankle Brachial Index score. Foot sensitivity was measured using a cotton and hammer, scratched on the sole of the foot. Glucose level was measured using a glucometer. The data analysis used for the blood glucose level was a t test. The data from the sensitivity and ABI score were measured using the Wilcoxon sign rank test. This research had ethical clearance and it was conducted in Unusa, No. 183/EC/KEPK/UNUSA/2018.

RESULTS

Table 1 shows that of the distribution respondents from the group, most of them (56,6%) were 56 - 65 years old, female (66,6 %) and occupation as traders (70%).

The mean score of Ankle Branchial Index before the intervention was 3.23, after the intervention showed an increase of 3.77. The mean value of foot sensitivity before the intervention shows 2.5, this value has increased after getting intervention that is equal to 3, while the average value of Blood Glucose level, has decreased, before the intervention shows

Table 1. Frequency Distribution of Age, Gender and Profession (n=30)

Demographic Data	n	%
Age		
36-45	0	0
46-55	13	43.4
56-65	17	56.6
Gender		
Male	10	33.4
Female	20	66.6
Occupation		
Unemployed	6	20
Government Employees	1	3.4
Traders	21	70
House work assistance	2	6.6
Security	0	0

the number 289.23 after being given an intervention of 124.57. The results of this study indicate that the diabetic foot spa has a significant effect on the Ankle Branchial Index ($p=0.001$), Foot Sensitivity ($p=0.001$) and Blood Glucose Levels ($p=0.001$) (Table 2).

DISCUSSION

The activities not only improve blood flow but they also make the patients feel comfortable and relaxed. Diabetic foot exercise is an effective way to improve the ABI score. Foot exercises are a way to improve circulation, especially of the feet. Foot exercises, which are an aerobic, are focused on the movement variations in the foot area that meet the criteria of continuous, rhythmical, interval, progressive and focused on endurance. Each step should be done completely (Wahyuni, 2013). The recommended exercise for DM patients is aerobics, meaning that it needs oxygen that can help the circulation of the blood, to strengthen the main muscles of the foot, to prevent the foot deformities that can reduce the potential of diabetic foot wound and to improve the insulin production used for glucose transport to the cells. This can help to reduce the level of blood glucose (Dewi, et al., 2012).

During the skin cleansing, the client's feet are soaked in warm water at a temperature of 41 – 42°C. According to the research of Suandika, soaking the feet in to warm water at a certain temperature can improve the blood circulation, reduce edema and increase the circulation to promote muscle relaxation. The heat of the warm water can cause blood vessel dilation which leads to an improvement in blood circulation (Suandika, 2016) and release pain (Zahroh & Faiza, 2018).

Through foot exercise therapy and soaking the feet in warm water, this activity also increases the ABI score. The nerve point of people with type 2 Diabetes Mellitus is the pancreas. This is a pancreatic point closely related to the hormone insulin which affects the blood levels in the body (Ruben, et al., 2016).

Emphasizing the point of reflection on the foot with that of the pancreas, it is located on both the right and left sides of the foot. The inside of the nerve receptors will work and the stimulation will turn into electricity or bioelectrics. This will spread to the brain and start in the pancreas, thereby increasing the hormone insulin. This allows the calcium levels in the blood to become balanced.

In this study, we also added massage to the points between the thumb and forefinger of the foot (Mahendra, et al., 2008). The emphasis is on repetition focused on the area of the foot reflection points which also makes the blood circulation system become smooth because of the bioelectricity stimulation. This helps to destroy clots in the bloodstream, thus helping to neutralize the excessive carbohydrates in the blood. This will lead to the improvement of the ABI. In this study, the researcher used an acupressure technique 30 times with a clockwise emphasizes (Mahendra, et al., 2008).

Based on the research above, it is shown that the ABI of a person with DM can be controlled and enhanced by doing the aforementioned activities, especially focused on the movements of the foot. The activities should be done regularly in a measured manner, in addition to properly and correctly. A diabetic foot spa activity that is done seriously will stimulate the blood vessels to circulate smoothly which is shown by the perspiration on the body. This can increase the insulin production of the pancreas, thus improving the ankle brachial index score (Wardani, et al., 2019).

It is shown that the blood glucose levels of a person with Diabetes Mellitus can be controlled or reduced by using such energy in an activity. Diabetic foot prevention cannot be separated from general disease control including blood glucose level control, nutritional status, blood pressure, cholesterol level and a healthy lifestyle. If the foot sensitivity is not continuously kept in a good condition, then it is likely that people with diabetes will experience diabetic foot disorders. This increases the risk of amputation and even the risk of death. This therapy can increase the sensitivity and circulation of the foot.

The foot spa affects the decrease in blood sugar levels and it can increase the sensitivity of the foot. This research has positive implications. That is, it can have an impact related to increasing the sensitivity of the foot when it is done within 2 weeks properly and according to the SOP spa guidelines for diabetic feet.

Puskesmas nurses should be given training through Training of Trainer (TOT). Monitoring the effectiveness of the interventions and providing motivation can be carried out by the cadres in each

Table 2. The dispute of the ankle brachial index, foot sensitivity, and. the blood glucose levels before and after the intervention of diabetic foot spa (n=30)

Variable	Mean	Std. Deviation	Std. Error Mean	p-Value
Ankle Brachial Index				
Pre-test	3.23	0.817	0.149	0.001
Post-test	3.77	0.430	0.079	
Foot Sensitivity				
Pre-test	2.50	0.630	0.115	0.001
Post-test	3.00	0.000	0.000	
Blood Glucose Levels				
Pre-test	289.23	99.524	18.171	0.001
Post-test	124.57	33.056	6.035	

region. The Health Service places nurses in the Puskesmas with a minimum education level of a Bachelor's of Nursing. They strive to have specialist nurses that are responsible for developing and managing non-communicable diseases control programs, especially Diabetes Mellitus, through empowering programs and developing diabetic foot spa center (Jansink, 2010).

The scope of nursing education in terms of community service assists in managing health problems, especially Diabetes Mellitus, by the means of students being equipped with how to properly practice diabetic foot spa. Therefore, health education is important when it comes to providing nursing care to people with Diabetes Mellitus due to their limited ability, including the prevention of the risk of injury due to diabetes.

The limitation of this study was not examining the characteristics of the respondents who may have a relationship with foot sensitivity and/or blood sugar levels. The characteristics that were not examined include culture, the consumption of food that is carried out, the daily activities undertaken and the patient's compliance with carrying out the therapies recommended by doctors, nurses and other health professionals.

CONCLUSION

A foot spa is an intervention which it is carried out regularly and independently. This will result in the tingling sensation and pain in the feet being reduced. Moreover, these problems can be removed and the patients can avoid complications such as ulcerations and amputation.

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Original Research

The Effectiveness of Auditory Stimuli from Murottal Quran to Improve Comfort and Weight in Low Birth Weight Infants: Randomized Controlled Trial

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ABSTRACT

Introduction: Low birth weight (LBW) infants who have been hospitalized are exposed to various conditions that provoke discomfort, which could trigger a stress response and growth disorders. This study aimed to identify the effects of auditory stimuli from Murottal Quran when it comes to the comfort and weight of LBW infants.

Methods: This study used a clinical randomized controlled trial design involving 52 low birth weight infants. The infants were randomly assigned to either the intervention group (n=26) or the control (n=26). The intervention of Murottal Quran was given using a speaker 4 times a day for 20 minutes every 3 hours. This intervention was conducted for three days.

Results: The results of this study show that there is a significant difference in the comfort of low birth weight infants after Murottal Qur'an on the first, second, and third days between the intervention and control groups ($p=0.014$; <0.001 ; <0.001). There was no significant difference in the weight between the intervention and control groups in the first, second, and third days ($p=0.481$; 0.481 ; 0.464).

Conclusion: The auditory stimuli of Murottal Quran can help to improve the comfort level of low birth weight infants during hospitalization. It can therefore be used as a supportive therapy to facilitate low birth weight infant and premature infant development.

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INTRODUCTION

Hospitalized infants exposed to diverse environmental stressors can experience negative effects (Majidipour et al., 2018; Boxwell, 2010). Environmental stress from varied medical devices and procedures causes discomfort in neonates (Bouza, 2009). The increased stress response can lead to acute or prolonged effects (Anderson & Patel, 2018; Hall & Sanders, 2018).

The stress response to physiological function could increase the risk of growth disorders, abnormal sleep patterns, hearing disorders, and developmental delay (Almadhoob & Ohlsson, 2015). Loud sounds from medical devices could disrupt the respiratory system, affect oxygen consumption, cause an irregular heart rate (Brown, 2009; Wachman & Lahav, 2011) and increase the energy consumption of hospitalized infants (Wachman &

Lahav, 2011). This could disrupt their growth (Valizadeh, Hosseini, Alavi, Asadollahi, & Kashefimehr, 2013; Wachman & Lahav, 2011). In one such study, Pickler et al. (2013) showed that environmental stressors, like loud sounds, increased their nutritional intake compared to loud sound. This could disrupt the optimal nutritional fulfillment of hospitalized infants.

One of the auditory stimuli that could be performed to reduce the stress response in neonates is Murottal therapy, i.e. Quran recitation (Majidipour et al., 2018). Murottal Quran has indicated positive effects on the preterm infants' vital stability (Eskandari et al., 2012; Marofi et al., 2018; Qolizadeh, Myaneh, & Rashvand, 2018). It has been found to reduce their pain response during treatment in a Neonatal Intensive Care Unit (Marofi et al., 2018). According to Majidipour et al (2018), Murottal could increase the physiological response

in neonates during painful invasive procedures. Another study (Rilla, Ropi, & Sriati, 2014) showed that Murottal Qur'an had more of an effect when it comes to reducing pain compared to music therapy.

Research studies related to Murottal therapy given to infants in NICU are still very limited, therefore further research is needed as an evidence-based practice for improving the quality of the nursing care provided to neonates. Majidipor et al (2018) and Marofi et al (2018) conducted research to measure the effects of Quran therapy on the physiological response to pain, but they did not look into the effects regarding comfort and weight. This made the writer interested in conducting research in order to identify the effects of auditory stimuli from Murottal Quran on the comfort and weight in LBW infants.

MATERIALS AND METHODS

This study used a clinical trial incorporating randomization within a controlled trial conducted in parallel between two groups, namely the Murottal Quran intervention group and routine care group. This study was conducted in one of the hospitals in Indonesia from March to May 2019. The number of samples was determined based on the previous study conducted by Qolizadeh et al (2018). The standard deviation for the intervention and control groups was 13.6 and 10.8 respectively where the total respondents for each group was 32 and the combined standard deviation was 12.3. The researcher set 5% for error type 1 and 20% for error type 2 (power 80%). The calculation resulted in 50 samples. The number of samples involved in this study was 52 LBW infants who were treated in perinatology. The intervention and control groups were determined through block randomization (block size of four) using a random number table. The sample was chosen according to a random

number table based on the sequence of LBWs entering the perinatology. The total sample for each group was 26 LBW infants selected randomly (Figure 1).

The inclusion criteria consisted of: a birth weight of less than 2500 grams, did not have a hearing disorder based on the medical records, did not have congenital anomalies such as a congenital heart defect, not suffering from diarrhea, exhibited a stable physiological function i.e. pulse frequency 120-160 pulses per minute, respiratory rate 30-60 times per minute and body temperature 36.5-37.5 °C (Rustina, 2015), possible for them to be weighed every day, age of 0-28 days, Muslim, and the mother allowed her baby to be the respondent. The exclusion criteria were the babies who received sedative therapy during the intervention, who exhibited respiratory distress syndrome, and where the mother did not allow her baby to be a respondent.

The outcome from this study focused on comfort and weight. Comfort was measured using the observation sheet of the COMFORTneo scale (van Dijk et al, 2009) consisting of alertness, calmness/agitation, respiratory response, crying, body movement, facial tension, and muscle tone. This instrument has never been used in Indonesia before, therefore the researcher translated it into Indonesian using the Back-translation method. In this study, inter-rater reliability was executed and it involved 3 experts in order to check the agreement among the observers using the COMFORTneo scale. The agreement among the observers showed there to be a strong relationship or reliable based on the Intraclass Correlation Coefficients, i.e. 0.982. This score indicated a very good or very satisfying inter-rater reliability (Koo & Li, 2016). The weights were measured using digital scales that had been calibrated in advance.

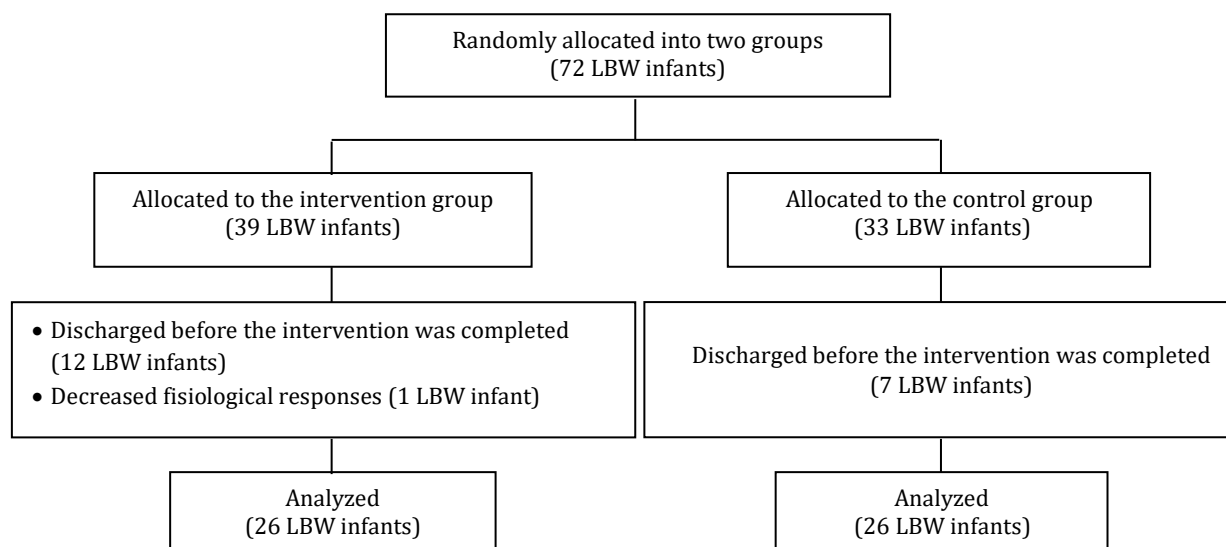


Figure 1. Enrollment and random allocation flowchart

The interventions of auditory stimuli from Murottal Quran given to the LBW infants were Surah Ar-Rahman and Yasin using an MP3 and a mini-portable speaker 4 times a day for 20 minutes every 3 hours in 3 days. The intervention was started after touching time (changing diapers, giving drink/breast milk or another routine intervention, and interaction with the parents) by playing the Murottal Quran through the MP3 player and speaker placed in the incubator. The speaker was placed 10-15 cm from the baby's head (Efendi, Caswini, Rustina, Teguh, & Iskandar, 2018). The first intervention was started at 9.30-10.30 WIB, the second intervention was started at 12.30-13.00 WIB, the third intervention was started at 15.30-16.30 WIB, and the fourth intervention was started at 18.30-19.30 WIB.

The weight was assessed at pre-intervention (baseline) on day 1 in intervention and control group. The infants' weight was measured on days 2, 3 and 4 after the intervention and on days 1 to 3 for the intervention and control groups. The pre-comfort assessment was assessed before the first

intervention in two groups using a video recorder for two minutes on days 1, 2, and 3. The video were taken within a distance of 30-40 cm. The post-comfort assessment was conducted right after the fourth intervention of Murottal Quran on days 1, 2 and 3. The comfort was assessed by 3 experts with a Master's degree in pediatric nursing who have more than 3 years of experience of working in perinatology. The comfort observation sheet was completed after 3 days of the intervention.

This research was approved by Ethics Committee of Nursing Faculty, Universitas Indonesia, No. 16/UN2.F12.D/HKP.02.04/2019. Before conducting the research on LBWs that met the inclusion criteria, the researchers first met the parents and provided an explanation of the objectives, procedures and interventions that will be given to the LBWs. If the parents were willing, the researcher asked for approval and offered them an informed consent form.

A computer device was used to facilitate the data analysis in this study. The data normality test was measured using Shapiro Wilk. The analysis

Table 1. Respondent's Characteristics and the Homogeneity between the Two Groups

Variable	Intervention (n=26)	Control (n=26)	p value
Sex			
Male	14	12	1.000
Female	12	14	
Nutrient type			
Breast milk	0	0	0.224
Formula milk	7	7	
Mix	19	19	
Birth weight (mean)	1620.96 (305.59*)	1552.31 (313.42*)	0.918
Age (mean)			
Gestational age	32.50 (1.77*)	32.96 (2.29*)	0.381
Chronological age	5.65 (5.78*)	8.69 (8.33*)	0.024
Intervention (mean)			
Pain procedure before intervention day 1	0.96 (1.11*)	0.73 (0.78*)	0.394
Pain procedure before intervention day 2	0.65 (0.98*)	0.50 (0.58*)	0.228
Pain procedure before intervention day 3	0.65 (0.85*)	0.38 (0.49*)	0.090

*Levene's Test

Table 2. Comfort and Weight Difference after the Intervention of Murottal Quran between the Two Groups

Variable	Intervention Group (n=26)		Control Group (n=26)		p value
	Median	Min-Max	Median	Min-Max	
Comfort					
Day 1	9.50	6-19	13.50	6-30	0.014*
Day 2	7.50	6-21	13.00	6-29	<0.001*
Day 3	7.00	6-19	16.50	6-30	<0.001*
Weight					
Day 1	1530.00	1140-2120	1445.00	1070-1920	0.481
Day 2	1535.00	1270-2130	1465.00	1090-1920	0.481
Day 3	1545.00	1250-2120	1460.00	1100-1980	0.464

Repeated Mann-Whitney test

Note: *significant at α (0.05)

between the groups was generated using a repeated Mann Whitney test for the non-parametric testing (Dahlan, 2014).

RESULTS

The data for this study came from 52 LBW infants selected randomly for the intervention group (n=26) and control group (n=26). The respondents' characteristics for this study comprised of sex, birth weight, gestational age, chronological age, nutrient type, and treatment before the intervention. The findings show that the number of male respondents was 14 in the intervention group and that the number of females was 14 in the control group. The most frequent nutrient type was a mixture of breast milk and formula, while the average birth weight in intervention and control group were 1620.96 grams and 1552.31 grams respectively. The average gestational age in both the intervention and control groups was 32.50 weeks and 32.96 weeks respectively. The average chronological age in the intervention and control groups was 5.65 days and 8.69 days respectively. The pain procedure before the intervention in the intervention group indicated an average of 0.96 on day 1, 0.65 on day 2, and 0.65 on day 3. Meanwhile, in the control group, the average was 0.73 on day 1, 0.50 on day 2, and 0.38 on day 3. The characteristics between the groups showed a homogenous variation with a p value greater than 0.05. The characteristics and homogeneity can be seen in Table 1.

The result of the repeated Mann-Whitney test on comfort and weight in the Intervention and Control group on days 1, 2 and 3 after the intervention in the Murottal group can be seen in Table 2. The results showed there to be a significant difference in the comfort scale after the intervention between the intervention and control groups ($p > 0.05$) with a median score in the intervention group that was less than the median score in the control group. The analysis from the repeated Mann-Whitney test on the infant's weight between the intervention and control group on days 2, 3 and 4 did not show any significant difference after the intervention of Murottal Quran ($p > 0.05$).

DISCUSSION

The Effects of Murottal Quran to Comfort

Murottal Quran is a therapy that can reduce the level of stress because listening to and reading the Quran increases the alpha waves in the

brain. This gives more of a relaxation effect than classical music (Zulkurnaini, Shilawani, Kadir, Murat, & Isa, 2012). The results of this study showed there to be a significant difference in comfort between the intervention and control group after the auditory stimuli from Murottal Quran was conducted for three days. This finding was in line with the research conducted by Marofi et al (2018) who found there to be a significant difference in the pain intensity average in the neonates after being given Murottal Quran between the intervention and control groups in an intensive care unit. The treatment in an intensive care unit affects the brain, with one of the responses being triggering a stress response. The stress response activates the sympathetic nervous system and hypothalamus gland, in addition to the pituitary and adrenals (Anderson & Patel, 2018).

According to Anderson and Patel (2018), the neonates in NICU that were exposed to music showed benefits related to the hypothalamus gland, pituitary, and adrenal (HPA). The sound of music could reduce the HPA stimuli by decreasing the cortisol level (Yamasaki et al., 2012). This finding was supported by Qiu et al (2017), who assessed 62 preterm infants related to the effect of music therapy on the infant pain profile, cortisol level, and β -endorphin. They showed there to be a decrease in pain score and increased β -endorphin after the music therapy was conducted for 2 weeks.

Another research study by Loewy, Stewart, Dassler, Telsey, and Homel (2013) involving 272 infants resulted in an improvement in their sleep condition and a quiet period for those who received music therapy. Keith, Russell, and Weaver (2009) conducted research on 22 infants in NICU and found that lullaby music significantly reduced the crying period after the music played.

Studies on the effect of Quran recitation on the physiological responses of neonates have also been conducted by other researchers. Several studies have showed there to be a significant difference in the physiological responses after receiving Murottal Quran therapy in neonates treated in NICU (Eskandari et al., 2012; Majidipour et al., 2018; Qolizadeh et al., 2018). The sound of the Quran could reduce the sympathetic nervous system activity in neonates, which can increase relaxation, reduce stress, and improve physiological responses such as the vital signs. Listening to Murottal Quran is one of the alternatives for neonates as

it is a distraction from the varied stimuli in the NICU (Qolizadeh et al., 2018).

The Effects of Murottal Quran on Weight

According to (Yamasaki et al., 2012), music could influence the metabolic process due to the activation of the HPA system. This activation plays an important role in metabolism and energy balance. The cortisol produced by the HPA system triggers gluconeogenesis and glycogenesis that can trigger protein, fat, and carbohydrate catabolism. Stress hormones can reduce the gastric activity and motility, which then prolongs gastric emptying and disturbs nutrient absorption.

Music could reduce their cortisol level, which decreases HPA activity, alters the catabolism process, and increases the amount of growth hormones (Yamasaki et al., 2012). A similar thing was also stated by (Lin et al., 2007) who found that there was an increase in gastric myoelectric activity in the respondents who listened to music, which increased their gastric motility and speeded up gastric emptying.

This study showed no significant difference of weight between LBW infants who received auditory stimuli from Murottal Quran and those who did not. This finding was supported by Farhat, Amiri, Karbandi, and Esmaily (2010), who conducted research involving 44 very low weight birth infants with a gestational age of less than 34 weeks. They were given lullaby music over 8 days every day for 20 minutes. His study did not show there to be a significant difference in weight between the intervention and control groups. Another study (Standley, 2012) also supported the results of this study, which found that there was no significant weight difference in babies who received music therapy based on the meta-analysis effect of music therapy for babies in NICU.

This finding was different from the study by Auto, Amancio, and Lanza (2013) who conducted an analysis of the weight difference between the infants receiving music therapy over a 7 day intervention. In this study, the intervention was given over 3 days. A literature review related to the effect of music therapy in preterm babies showed that one of the positive effects of music on preterm babies was an increase in daily weight (Neal & Lindake, 2008). The increase in their daily weight did not show a significant difference in this study because the average age was 5.65 days. According to Clark, Spitzer, and Olsen (2014), at 5-10 days old, the weight tended to remain the same and it would

increase at 10-56 days old. The average of the respondent's age was less than 10 days. This is one of the reasons why this study did not yield significant results. The study by Auto, Amancio, and Lanza (2013) using a sample of 10-56 day old infants showed that there was a significant difference between the intervention and control group.

According to Standley (2012), birth weight was related to the effect of music therapy in neonates. This is based on the meta-analysis of music therapy on neonates in NICU. Her research showed that music therapy was not significant on infants with a birth weight above 1500 grams. This was in line with the finding of this study where the average birth weight of the respondents was 1552 grams and 1620 grams for the two groups. The analysis yielded no significant differences between the intervention and control group after receiving auditory stimuli in the form of Murottal Quran.

CONCLUSION

The finding of this study showed that auditory stimuli in the form of Murottal Quran is effective at improving the comfort of LBW infants treated in perinatology. In terms of weight, there was no significant difference. The auditory stimuli of Murottal Quran could improve the comfort of LBW infants during hospitalization.

The result of this study can be used as one of the supportive therapies to facilitate low birth weight and premature infant development. Further research should consider the infants' age and weight, and making the intervention duration more than 3 days in order to yield more significant result.

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EDITORIAL

Internationally, academic nurses face increasing pressure to publish their research in high quality and esteemed journals. Publication is important for disseminating research findings that can be adopted to influence the delivery of health care, but also influences rankings and prestige of universities and the professional standings of individual researchers. However, there are many challenges in making it to successful publication, particularly for novices.

Internationally, journals are under growing pressure having a limited scope on how many manuscripts they can publish in any one issue and annually. As academics are under pressure to publish more, numbers of manuscripts being submitted to each journal increases every year. This means that the number rejected by each journal also increases. Many of these manuscripts may not be poorly written or present bad research, they are just not prioritised by editors as material they want to publish. It is, therefore, important to submit manuscripts that present work that an editor wants to publish in their journal. Making it through the initial editor screening can be challenging, but there are strategies that can assist with increasing the likelihood of successful publication.

When developing your manuscript for publication, it is important to write specifically according to the journal you are planning to publish in. Often, researchers will write their manuscript and then try to fit it into a particular journal. This strategy may not be very successful. Journals all have different styles, audiences and manuscript guidelines. It is important when writing the manuscript to consider all of these factors. It is easy to forget you are writing for a particular audience, not just writing to get published. Researchers need to be clear about the audience who read the particular journal, and who is likely to benefit from the research outcomes being reported. It is important to carefully choose journals to publish work in and use the journal's specific author guidelines to develop the manuscript. Many papers are rejected by journal editors because they have not been developed according to the actual journal guidelines.

In preparing for publication, it is important that researchers identify and highlight the new knowledge that their research adds to the existing knowledge base. A lot of research conducted in nursing is very localised to a particular practice or educational setting or geographical location. Researchers need to consider the international scope of their findings if they want to publish in international journals that have readers from around the world. Such considerations need to include how research methodologies or findings could be used by others in international settings or the uniqueness or new knowledge within the paper needs to be highlighted. Overall, it is important that the manuscript is relevant to a broad, international readership as much as possible, and that this relevance is clear.

There is an additional challenge for nurse researchers whose first language is not English. Most of the highly ranked journals in nursing are published in the English language. Not only are they competing for publication space, these researchers face rejection because of issues relating to English expression, grammar and tense. Collaborations with other researchers whose first language is English may be one strategy for increasing possibility of acceptance through improving the English language in manuscripts submitted to journals. Furthermore, collaborating with researchers who have established publication records

means that there are members of the writing team who have expertise in being successful at navigating the many publication challenges.

Ethics is also an important component in reporting on research conducted. In publishing their work, researchers are required to address ethical issues related to their studies. As editors, we often see papers where ethical considerations comprise only one statement that the research had ethical approval. However, there is more to reporting on ethics than merely acquiring ethical approval, which does not necessarily mean that the research was actually conducted in an ethical manner. In particular, it is important to discuss aspects relating to issues such as informed consent and how this was managed, as well as recruitment strategies demonstrating there was no pressure placed on potential participants or power imbalances between researcher and participants (McKenna & Gray, 2018). Overall, there is a need for more transparent reporting of ethical processes in research.

The growth in predatory journals further complicates the publication process, particularly for novice researchers. Predatory journals are most often money-making scams. Each year, many good research papers are caught up in predatory journals that may not even exist, essentially becoming lost work that cannot be published anywhere else. It is very important for researchers to be aware of how to avoid losing their valuable work to these entities (Darbyshire et al., 2016). It is not uncommon to receive emails daily from so-called journals to publish with them. They often promise a quick turnaround, sometimes in a few days which is impossible for peer review to be conducted. Many have names similar to legitimate journals so you may think they are the real journal. It is very important to carefully check that a journal is legitimate before submitting any work to it. Usually, a lot of work has gone into developing a manuscript for publication and it is vital not to lose that effort.

The need to publish nursing research is increasing. However, this has also increased the competition and number of manuscripts submitted to international journals each year. Being successful in publishing is complex but necessary and empowering. Researchers need to consider a range of strategies they can use to increase the possibility of successful publication in appropriate journals.

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