



Socio-demographic Determinants and The Family Ability to Care for Children with Avoidant Restrictive Food Intake Disorder (ARFID)

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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, Ardimumulyo, 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, Pobe, 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

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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 planing 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 n=5,991 (22.63 %)		No 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, Sustyowati, 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 form 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.

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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

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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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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 Tuban 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 (Mularsih, 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 (Caturiyaningtyas, 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

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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 (Karantikola 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, & Papatthanassoglou, 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 assess 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

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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 themselves 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 examined 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

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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 tools 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 -value = .001		

Table 3. Differences in leader empowering behaviors and psychological empowerment

Variables	Leader Empowering Behaviors	Psychological Empowerment
	p-value	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 hierarchical 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 Sukesi'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 form 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 wroking 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

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**R Endro Sulistyono¹, Tantut Susanto², and Rr Dian Tristianas³**¹ Diploma of Nursing, Faculty of Nursing, Universitas Jember, Indonesia² Faculty of Nursing, Universitas Jember, Indonesia³ Faculty of Nursing, Universitas Airlangga, Indonesia**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, Fitriyasari, 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 of osing, 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 (Tristian, Yusuf, Fitriyasaki, 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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