



THE MATERNAL SOCIO-DEMOGRAPHIC FACTORS ASSOCIATED WITH NUTRITIONAL STATUS IN CHILDREN UNDER FIVE YEARS OLD IN WEST NUSA TENGGARA PROVINCE, INDONESIA

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ABSTRACT

Socio-demographic factors of mothers are recognized as an important indicator of nutritional status in children under five years old. The aim of this study was to identify the relationships between socio-demographic factors and nutritional status in children under five years old in West Nusa Tenggara Province, Indonesia. A cross-sectional research design was employed in this study. Of 327 mothers who had children under five years old participated in this study. Data were collected by a self-report questionnaire to assess socio-demographic of mothers. Anthropometric measurement was used to examine the nutritional status of children under five years old. The nutritional status of children was used WHO Anthro software v3.2.2 which was based on weight for age (WAZ). Regarding to the criteria of WHO, children who have Z-score < -2 or below are under nutrition and children who have Z-score -2 or above are adequate nutrition. Descriptive statistics and Chi square were used to analyse the data in this study. The results showed that there were statistically significant correlated between maternal socio-demographic factors and nutritional status in children under five years old including maternal education levels ($\chi^2 = 19.26, p < 0.001$), maternal marital status ($\chi^2 = 15.12, p < 0.001$) and maternal age ($\chi^2 = 12.70, p < 0.001$). However, there were no significant relationships between maternal employment, parent income, number of children and nutritional status in children under five years old in West Nusa Tenggara Province, Indonesia. Therefore, the findings in this study confirm that maternal age, maternal education level, and maternal marital status are important factors for the nutritional status of children under five years old.

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KEYWORDS: Nutritional status, Children, Mothers, Socio-demographic factors. West Nusa Tenggara province.

INTRODUCTION

Nutritional status of a population is a major reflection of the nation's economic development and public welfare policies (William, 2006). One of the indicators to measure the progress towards Millennium Development Goals (MDGs) is the prevalence of nutritional problems among children under five years old (World Health Organization (WHO), 2012). Demissie and Amare, stated that adequate nutrition during infants and early childhood is a keystone of survival health and fundamental to the development of children (Demissie and Amare, 2013). According to Akinsola, the age group 0-5 years old is a crucial nutritional stage in the growth and development of children (Akinsola, 2006). A well-nourished child is one whose weight and height measurements compares very well with the standard normal distribution of heights and weights of healthy children of the same age and sex (Mahgoub *et al.*, 2006). Therefore, the children aged 0-5 years old should be concerned about their development and nutritional status, including malnutrition problems.

Malnutrition affects physical growth, morbidity, mortality, cognitive development, reproduction and physical work capacity and it consequently impacts on human performance, health and survival. In addition, WHO reported more than one third of child mortality to malnutrition making it the leading cause of child death worldwide (World Health Organization (WHO) *et al.*, 2007).

Maternal factors have found to be the main determinant of the level and degree of development stages of children under five years old (Kamiya, 2011). Another characteristic such as the number of children, low maternal education, low family income also have significantly increased the risk for infant malnutrition (Yang *et al.*, 2012). Furthermore, parent occupation, poverty and parent's educational levels were important risk factors of malnutrition (Shaikh *et al.*, 2007). While, children with unemployed mothers are better in terms of health and nutritional status (Seid, 2013). A study by Abuya, Ciera, and Murage, stated that maternal education is a strong predictor of child malnutrition as well as socioeconomic status that is significantly associated with malnutrition (Abuya *et al.*, 2012).

There are several efforts of government-federal, donor agencies such as UNICEF and WHO to prevent incidence of malnutrition in children under five years old (World Health Organization (WHO) *et al.*, 2007). In Indonesia, several programs have been implemented by the government to reduce the prevalence of malnutrition including tracking program and audits of malnutrition, breast milk feeding assistant (MP-ASI), supplementary feeding recovery (PMT-P), referral support, and treatment support programs for malnutrition (Ministry of Health Republic of Indonesia, 2010). However, the prevalence of malnutrition, especially in West Nusa Tenggara is still high (Ministry of Health Republic of Indonesia, 2013). Therefore, with this background, this study was conducted to examine the relationships between maternal socio-demographic factors and nutritional status in children under five years old.

METHOD

Participants and Setting

The total participants in this study were 327 mothers who had children under five years old. The participants were selected from five work areas of Public Health Centre (PHC). The inclusion criteria of participants were (1) mothers who had children aged six months until five years old, (2) mothers who live in West Nusa Tenggara Province-Indonesia, (3) mothers who were able to understand and fill out the questionnaires, (4) mothers who were agreed to participate in this study.

Design

In this study, a cross-sectional design was employed.

Data Collection

The approval letter was granted from the Ethical Review Board for Research Involving Human Research Subjects, Boromarajonani Collage of Nursing Nopparat Vajira. The permission letter from the director of BCNNV and ERB of BCNNV was sent to the Board of National Unity and People's Protection (Kesbanglinmas) West Nusa Tenggara and Ministry of Health (MoH) North Lombok. The researcher received an approval from the Head of all PHC and the researcher explained the research objective, research method, instrument, and method of data collection. Nurses who were responsible to provide Integrated Health Post (Posyandu) in the community contacted by the researcher and arrange schedules for the data collection.

The researcher checked the data of mothers who had children aged six months until five years old in each PHC. Then, the researcher arranged population randomly by computer program to select qualified subjects. The researcher explained information about the study to the potential participants who met criteria with the Participants Information Sheet (PIS). All potential participants required to agree freely after understood the study thoroughly. Participants consent form and permission form was signed and kept by the researcher and participants. The researcher and research assistants, who were trained about the way to use questionnaires correctly, collected data using questionnaires and anthropometric measurement. In completing the questionnaires, the participants were given time approximately 30 minutes per participants. During the data collection,

the research team required to observed tiredness, issues, and problem or uncomfoting of the respondents. The participants could withdraw from the study at the time. The research team checked the data for completeness of the questionnaires.

Measurement Tools

1. Socio-Demographic Characteristic

The questionnaires in this study covered socio-demographic factors included maternal age, maternal employment, maternal education level, parent income, number of children, and maternal marital status.

2. Nutritional status of children under five years old

The researcher assessed data for anthropometric measurement in children including, age, height and weight. Anthropometric measurement was used to assess the nutritional status in children under five years old based upon weight-for-age (WAZ). The anthropometric data such as age, height and weight of the children were entered into WHO Anthro software version 3.2.2, and expressed to Z-scores for each of the anthropometric indicates of nutrition status against the new WHO child growth standards reference. Children are classified as an adequate nutrition when the weight for age is the Z-score by -2 SD. However, children are classified as an under nutrition when the weight for age is below the Z-score by -2 SD (World Health Organization (WHO), 2012).

3. Data Analyses

The statistical analysis was conducted using SPSS software version 15.0 (Kasetsart University, Thailand). The percentages were used to describe the socio demographic characteristic data. The percentages were calculated for analysis of nutritional status in children. Chi square test coefficients were computed to define the relationships between nutritional status in children under five years old and the maternal socio-demographic factors (maternal age, maternal employment, maternal education level, maternal marital status, number of children, and parent income).

RESULT

The purpose of this study was to examine the relationships between socio-demographic factors and nutritional status in children under five years old. The variables included maternal age, maternal employment, parent income, maternal education level, maternal marital status, and number of children. The data was collected from August to September 2014.

Table-1. The frequency and percentage of nutritional status in children under five years old (n = 327)

Nutritional status	Frequency	Percentage
Adequate nutrition	203	62.14
Under nutrition	124	37.86
Total	327	100

According to table 1, 327 children participated in this study. About 62.14% children were in adequate nutritional status and 37.86% were in under nutritional status.

A. Socio-Demographic Factors

Table-2. Socio-demographic factors of the mothers who had children under five years old (n=327).

Demographic factors	Frequency (n)	Percentage (%)
Maternal Age		
< 20 and >35	104	31.78
20-35	223	68.22
<i>Continue</i>		

Parent Income		
<Rp. 1.200.000	225	79.22
Rp. ≥ 1.200.000-	102	20.78
Maternal Employment		
Employed	87	26.61
Unemployed	240	73.39
Maternal Educational Level		
Primary School or Below	155	47.43
Junior High School or Above	172	52.57
Maternal Marital Status		
Married	303	92.71
Widowed/ Divorced	24	7.29
Number of Children		
1-2 Children	259	79.22
>2 Children	68	20.78

According to table 2, the results showed that the majority or 68.22% of respondents were aged 20-35 years. More than half or 79.22% of total respondents had incomes less than Rp. 1.200.000 per month. Most of respondents or about 73.39% among them were unemployed or being housewife. The maternal education level of the sample approximately 52.57% were junior high school or above, and the rest about 47.43% were primary school or below. Most of respondents or 92.57% were married. The total number of respondents who had 1-2 children were 79.22%.

B. The Relationships between Maternal Age, Maternal Employment, Parent Income, Maternal Education Level, Maternal Marital Status, and Number of Children and Nutritional Status in Children Under Five Years Old.

Table-3. The relationships between socio- demographic factors of mothers and nutritional status in children under five years old (n=327)

Variables	Nutritional status		χ^2	p-value
	Adequate nutrition	Under nutrition		
Maternal education level			19.256	.000
Primary school or below	77	78	-	-
Junior high School or above	126	46	-	-
Maternal marital status			15.13	.000
Married	197	106	-	-
Widowed/ Divorced	6	18	-	-
Maternal Age			12.70	.000
< 20 and >35	50	54	-	-
20-35	153	70	-	-
Maternal employment			3.30	.071
Employed	47	40	-	-
Unemployed	156	84	-	-
Number of children			2.14	.143
1-2 Children	93	93	-	-
>2 Children	37	31	-	-
Parent income			.03	.867
<Rp.1.200.000	139	86	-	-
Rp. ≥ 1.200.000-	64	38	-	-

The results in table 4 showed that maternal education level, maternal marital status, maternal age, and maternal knowledge were statistically significant associated with nutritional status in

children under five years old. The variables that had statistically significant correlated with nutritional status in children under five years old were mothers educational level ($\chi^2 = 19.26, p < 0.001$), followed by marital status ($\chi^2 = 15.13, p < 0.001$), and maternal age ($\chi^2 = 12.70, p < 0.001$). However, there were no statistic and statistically significant relationships between maternal employment, parent income, and number of children and nutritional status in children under five years old.

DISCUSSION

The results found that the maternal socio-demographic factors included maternal age, maternal education level and maternal marital status were significantly correlated with nutritional status in children under five years old.

The finding of this study showed that there was a significant relationship between maternal educational level and nutritional status in children under five years old. Mothers with lower educational levels (primary school or below) were more likely to be at risk of having children with below standard nutritional status than mothers with higher educational levels (Junior high school or above). This indicated that maternal educational level was an important factor of mothers to create a favourable living condition thereby providing better nutrition to their children. This finding was consistent with one previous study conducted in Pakistan which showed that mother's education was significant relationship on nutritional status in children aged below five years (Shaikh *et al.*, 2007). Some studies also reported that the most consistent indicator of child's nutritional status was the maternal educational level. The mother factor was a significant predictor for child nutritional status (Abubakar *et al.*, 2012; Abuya *et al.*, 2012). In addition, another study conducted in Nigeria also noted that mother's educational level showed a significant influence on the nutritional status of children 0-5 years in the area under study (Mboho and Bassey, 2013). Furthermore, more evidence from three other countries (Malawi, Tanzania, and Zimbabwe) reported that the nutritional status of children improved with higher level of mother's education (Makoka, 2013). Thus, it could be concluded that maternal educational level was an important factor for children's nutritional status.

According to the maternal marital status, there was a significant relationship between maternal marital status and nutritional status of children under five years old. This study indicated that children living with complete parents showed a better nutritional status compared to their peer living with single parent. For children living with both mother and father, their parents complemented the role of each other in taking care of their children. In addition, with both parents the economic mean to fulfil the nutritional needs of their children could be better met and besides that, the mothers would have more time to pay more attention on their children. This finding was consistent with some previous studies which had found that the nutritional status of children living with complete parents were generally higher than those living with just single parent (Brown, 2004; Hoffer, 2006; Sobolewski and Amato, 2007). Moreover, the results yet of studies previously conducted by others (Kingsley, 2003; Barrett and Turner, 2005; Waldfogel *et al.*, 2010; Fentaw *et al.*, 2013) also found that children living with single parent were more likely to be under nutritional status. Therefore, the results of this study support the relationship between maternal marital status and nutritional status among children under five years old.

According to the results, there was a significant relationship between maternal age and nutritional status of children under five years old. Maternal age is a factor that influences the nutritional status of children (Okafor, 2002). The finding in this study revealed that mothers in the age group below 20 years, whose children were more likely to be below nutritional requirement. This might be because their lack of experience of caring for their children and lack of knowledge of proper child nutrition. Furthermore, mothers aged above 35 years were more likely to be at high-risk of themselves being below nutritional requirement making them unable to take the responsibility of providing adequate nutrition to their family. However, mothers in the aged group of 20-35 years were more experienced of taking care of their children and provided to their children an adequate nutrition. This finding was consistent with previous studies (Demoke, 2002; Akinsola, 2006; Okoh, 2013) which found that women who were married at the age of 20 or earlier were likely to be lacked of experience of taking care of themselves as well as their children. While,

mothers aged above 35 years were also at risk of their children being below nutritional requirement (Akinsola, 2006). In addition, another study also found that children growing up being cared by teenage mothers were more likely to suffer with under nourishment (Fentaw *et al.*, 2013). Therefore, it can be stated that the maternal age is correlated to the nutritional status of children under five years old.

In this study, it was found that the maternal employment was not significantly associated with the nutritional status of children under five years old. It indicated that women in employment enhanced the household's accessibility due to increased income. However, it is likely to carry negative effects on nutritional status of children since the mothers were being employed, therefore time available for taking care of their children would be reduced (Effiong, 2008). This finding was consistent with another study by Seid (2013) which had found that children with unemployed mothers would be preferable in light of their children's health and nutritional status. In contrast, some studies had found that mother's occupation carried a positive association with the nutritional status of their children (Akpan, 2009; Helga *et al.*, 2011). Therefore, the relationship between maternal employment and nutritional status of children under five years old has remained inconclusive.

The results in this study showed that majority of the respondents were of low income and no significant relationship between parent income and nutritional status of children under five years old. The reason for this might be related to the population of the selected area under this study which was located in a rural area. However, most of them had land to plant their crops and to raise livestock and as a result, the land has provided them with enough food for each and every family in this area. This finding was consistent with a study conducted in Pakistan by Shaikh *et al.* (2007) which reported that family's income did not show a significant relationship to nutritional status of children under five years old. In contrast, in some studies, it was found that low family income significantly increased the risk factors for malnutrition (Akpan, 2009; Janevic *et al.*, 2010; Yang *et al.*, 2012). Similarly, economic status of the household was a significant determinant of child's health and nutritional status (Sunkamni, 2012). But as far as the results of this study were concerned it could be concluded that parent's income was not related to nutritional status of children under five years old.

The result of this study found no significant relationship between number of children in the family and the nutritional status of children under five years old. This could possibly be that the mothers tended to provide enough food to all their children and the number of children in the family therefore was no direct relation to the nutritional status of the children under five year old in the same family. However, in contrast with findings of other study previously conducted in Pakistan which showed the number of family members could pose a risk factor of being below standard of nutritional status to children under five years old (Jamro *et al.*, 2012). Moreover, nutritional status of children also correlated to several socio-demographic factors including number of children in the family (Ukpong, 2006; Okoli, 2009). Based on previous finding, there was no consideration of the number of children in the family being related to nutritional status of children themselves and therefore, it was concluded that there was no relationship between number of children in the family and nutritional status of children under five years old.

LIMITATION OF THIS STUDY

As common with all research study, it is important to hereby acknowledge some limitations of this study. Firstly, the results may not sufficiently justify any generalization on nutritional status of children under five years old living in urban area since this study was conducted entirely with children living in rural area. Secondly, due to the fact that the data collection is assisted by health volunteers as assistant researchers, so this is possible to influence the result of the study.

CONCLUSION

This study was aimed to examine the relationships between the maternal socio-demographic factors and nutritional status in children under five years old in West Nusa Tenggara Province, Indonesia. The results showed that there were significant relationships between some maternal

socio-demographic factors and nutritional status in children under five years old in study area. As findings revealed that maternal age, maternal education level, and maternal marital status were important factors for nutritional status of children under five years old in study area. This study is one of very few studies which have investigated on the mother's as the core respondents to the questionnaires because the mothers bear more responsibility of taking care of their children. Therefore, nurses as healthcare providers should pay more attention to this group of mothers with the aim of improving the nutritional status of children aged below five years. Early assessment such as taking children's weights, measuring children's height would prevent any incidence of children becoming under nutritional status. In addition, the results of study may be useful as a reference to develop intervention programs for mothers who had children under five years old to reduce the prevalence of malnutrition in West Nusa Tenggara Province.

RECOMMENDATIONS

This study has put focus on poor nutritional status among children under five years old. However, the issue with overweight of children was not included in this research. Therefore, it is recommended that future research should include this issue of overweight and its associated factors among mothers with children aged below five years. Moreover, for the future research the multivariate analysis would enable identification of the factors influencing nutritional status of children aged below five years.

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