

THE IMPACT OF HOUSEHOLD SOCIAL ECONOMIC CHARACTERISTICS TO TODDLER NUTRITION: BASED ON INDONESIAN LONGITUDINAL DATA

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Abstract

The family has a very important role in the growth, development, and fulfillment of nutrition for the toddler. Fulfillment of early childhood nutrition can improve their physical and mental development, protect their health, and create future generations of high productivity. This study aims to examine the socioeconomic status of families against the nutritional status of children under five in Indonesia. This study use cross section data sourced from wave 5 of the Indonesian Family Life Survey (IFLS). The research use the Multinomial Logistic Regression method and is processed using Stata 12. The sample of this study is children aged 0-60 years (toddlers) of 4,670. The dependent variable is the nutritional status category based on body weight/age of the toddler. While the independent variables are place of residence, child sex, mother's education, and family income. Estimation results show that socioeconomic factors determine the nutritional status of children under five.

Keywords: Toddler nutrition, Residence, gender, mother's education, family income

INTRODUCTION

The quality of children's health in general is determined by their family background. As stated by Soetjningsih (2012) and Notoatmodjo (2003), the growth and development of children is influenced by their families. In handling the nutritional status of children, their families have a very important role. The family environment is a place for children to maximize growth and development and fulfill their nutrition. Families with suitable family functions and good emotional ties can support the growth and development of their children (Almatsier, 2010; Soetjningsih, 2012). Based on previous research conducted by Khasanah (2012) about family care patterns and nutritional status, it was found that good family care had a positive correlation with children's nutritional status.

Nutrition problems are more vulnerable to children. Therefore, they need a higher nutritional intake compared to adults. Nutrition is an important requirement for their growth and development, because it can enhance their physical and mental development, protect their health, and be a strong foundation for high productivity in the labor market in the future. Thus, the fulfillment of nutrition for children under five years certainly affects the quality of human resources in a country and becomes a driver of economic growth.

Meanwhile, children will suffer from malnutrition if they cannot access adequate and balanced nutrition. Malnutrition is a problem of malnutrition and being overweight, which will cause health problems, such as illness, death, and disability. It will also reduce the level of productivity, inhibit the growth of brain cells resulting in ignorance and mental retardation.

According to UNICEF (1998), more than 200 million children under five in developing countries suffer from malnutrition. Malnutrition contributes more than half of the nearly 12 million deaths of children under five in developing countries each year.

As a developing country, Indonesia is also experiencing problems of malnourished children. In 2013, children under five were reported to have experienced severe malnutrition (19.6%) and malnutrition (12%), while those suffering from stunting amounted to 32.9% (Rakerkesnas Regional Barat, 2015). Meanwhile, based on the 2015-2019 National Medium-Term Development Plan (RPJMN), Indonesia aims to reduce the proportion of children who are malnourished to 17%, malnutrition to 9.5% and stunting to 28% by 2019. According to UNICEF (2010), malnutrition occurs due to a combination of factors, namely deficiency in terms of access and food quality; inadequate air; sanitation and health services; and sub-optimal health care services. Based on the description above, this study aims to examine the factors that might affect the nutrition of children in Indonesia.

LITERATURE REVIEW

Ulfani, Martianto, & Baliwati (2011) found that acute and chronic nutritional problems still occur in Indonesia. Acute nutritional problems in most districts/cities in Indonesia are shown by underweight and wasted problems, while chronic nutritional problems are shown by stunted problems. The problem of acute nutrition is also related to the mother's parenting towards her toddler, the mother's knowledge gained from the education process and the ability to access information implemented in her daily life (Ulfani, Martianto, & Baliwati, 2011).

In another study by Skoufias (1999) found that in Indonesia nutritional deficiencies were measured by a significant weight index with poor nutrition. The study found that the level of parental education especially mother's education had a significant influence on the nutritional status of children. Mother's education seems to have a significant effect on the health of boys and girls aged 2-5 years (Skoufias, 1999). Indarti (2016) found a relationship between maternal education and nutritional status of toddlers that the proportion of undernutrition in toddlers who have low-educated mothers is much higher than that of high-educated mothers which is 17.9% compared to 7.8%.

Then also found the relationship between the economic status of the family with the nutritional status of children. Toddlers living with families with low economic status have a higher proportion of undernourished status compared to toddlers living with families with high economic status. The percentage of undernourished children under five living with families with low economic status was 17.9% and malnutrition among children living with families with high economic status was 7.7% (Indarti, 2016).

Pasay in Ananta & Hatmadji (1985) looked at the quality of human capital from the household side. In other words, the quality of human capital is related to the quality of the household itself. The first thing that is related is the ability of households to feed themselves. The application of the theory of human capital (human capital) in the field of nutrition and health improvement can be implied for efforts to fight poverty.

Research by Sumarto & Silva (2015) using data from the Indonesia Family Live Survey (IFLS) by controlling socioeconomic factors such as: children, parents, household characteristics, etc. found that maternal education and the area of residence strongly influence chronic malnutrition among children in Indonesia. In another study from Hanandita & Tampubolon (2015) using multilevel multinomial logistic regression analysis to estimate the relationship between nutritional status and a number of socio-economic indicators at both the individual and district levels. In this research, it was found that Indonesian malnutrition is still a disease of poverty, while excess nutrition is one of wealth.

METHODOLOGY

This study uses data sourced from wave 5 of the Indonesia Family Live Survey (IFLS) in 2014. Then the data is processed using the Stata 12 program. The sample in this study is children aged 0 - 60 months (toddlers), totaling 4,670 toddlers living in Indonesia and interviewed by wave 5 of the Indonesia Family Live Survey (IFLS5) in 2014.

Next, using data from the Indonesia Family Live Survey wave 5 (IFLS5) in this study obtained data for both dependent and independent variables. The dependent variable in this study is the z-score category of under five nutritional status. The z-score categorization of the nutritional status of children under five in this study was carried out based on body weight index according to age. Furthermore, the z-score calculation is based on the Decree of the Minister of Health of the Republic of Indonesia Number 1995 / MENKES / SK / XII / 2010 Concerning Anthropometry Standards for Assessing Children's Nutrition Status (Menteri Kesehatan Republik Indonesia, 2011). Explanation is shown in **Table 1.** below:

Table 1. Operational Definitions of Dependent Variables

Variable Type	Variable name	Index	Category Nutrition Status	Threshold (Z-Score)
Dependent Variable	z-score nutrition status category	Weight according to Age (BB / U) Children aged 0-60 months	Severe wasted	< - 3 SD
			Wasted	- 3 SD until < - 2 SD
			Good nutrition	- 2 SD until 2 SD
			Overweight	> 2 SD

Source: Minister of Health of the Republic of Indonesia Number 1995/MENKES/SK/XII/ 2010

Whereas the independent variables in this study are the variables of the child's place of residence, sex of the child, length of mother's education, and family income. Further explanation in **Table 2.** follows:

Table 2. Operational Definitions of Independent Variables

Variable Type	Variable name	Explanation
Independent variable	Residence	Dummy Variable by controlling the urban variable (dummy urban) 0 = toddlers live in urban areas 1 = toddler lives in a rural area
	Toddler gender	Dummy Variable by controlling the boy variable (boy dummy) 0 = toddler boy 1 = toddler girl
	Mother's education	Mother when she was educated (in years)
	Family income	The sum of the income of the father and mother

Source: research data processing (2019)

The analysis of the relationship of dependent and independent variables in this study uses the logistic regression method. Regression analysis with logistic regression methods aims to test the probability that is likely to appear or not in an event. The qualitative response regression model is also called the probability model (Gujarati & Porter, 2009). The logistic regression used in this study is the Multinomial Logistics Model.

The Multinomial Logistics Model is a logistic model used when the dependent variable and the independent variable are categorical variables. Logistic regression is one method that can be used to find the relationship between response variables that are dichotomous (nominal or ordinal scale with two categories) or polychotomous (having nominal or ordinal scale with more than two categories) with one or more predictor variables and response variables are continuous or categorical (Field, 2005).

Below is an empirical model of Multinomial Logistics regression for the determinants of children's nutritional status. **Equation 1.**

$$zscore_i = \beta_0 + \beta_1 residence + \beta_2 toddler\ gender + \beta_3 mother's\ education + \beta_4 family\ income + \varepsilon_i \quad (eq.1)$$

RESULT AND DISCUSSION

Based on the results of data processing using the Stata 12 program with a total sample of 4,670 toddlers, it was found that Prob> chi2 was 0,000. Thus it can be interpreted that simultaneously the independent variables (Residence, Toddler sex, Mother's education, Family income) influence the dependent variable (z-score category of nutritional status) in the category of malnutrition, lack of nutrition, good nutrition, and over nutrition. The processing results also showed an LR chi2 (18) of 251.19 which explains the model's ability to predict the dependent variable (z-score category of nutritional status). The results of processing with the Multinomial Logit Regression Model are shown in **Table 3.** below:

Table 3. Results of data processing with the Multinomial Logit Regression Model

Z-score nutrition status category	Coef.	Std. Err.	z	P > z	(95% Conf.
Severe wasted					
• Urban dummy	-0,389	0,242	-1,60	0,109	-0,864
• Male dummy	0,278	0,237	1,18	0,240	-0,185
• Mother's education	-0,069	0,027	-2,49	0,013	-0,123
• Family income	-0,241	0,178	-1,35	0,177	-0,591
Constanta	0,255	2,606	0,10	0,922	-4,853
Wasted					
• Urban dummy	-0,144	0,949	-1,52	0,129	-0,330
• Male dummy	0,210	0,092	2,27	0,023	0,028
• Mother's education	-0,030	0,011	-2,82	0,005	-0,052
• Family income	-0,194	0,069	-2,80	0,005	-0,330
Constanta	1,189	1,012	1,17	0,240	-0,795
Number of obs	4.670				
LR chi2(18)	167,09				
Prob > chi2	0,0000				
Pseudo R2	0,0258				
Log likelihood	-3158,2528				

Source: research data processing (2019)

Residence and nutritional status of toddlers

Based on Table 4 on the status of malnutrition shows that the coefficient of urban dummy is (-0.389) with $P > |z|$ 0.109. This explains that toddlers living in urban areas will reduce the likelihood of having malnutrition, although not significantly. Toddlers living in urban areas will 38% reduce the chance of toddlers experiencing malnutrition compared to toddlers living in rural areas.

Whereas the lack of nutritional status indicates that the urban dummy coefficient is (-0.144) with $P > |z|$ 0.129. This explains that toddlers living in urban areas will reduce the likelihood of having malnutrition, although not significantly. Toddlers who live in urban areas will 14% reduce the chances of toddlers experiencing malnutrition compared to toddlers who live in rural areas.

Sex and nutritional status of children under five

In the malnutrition status, it shows that the male dummy coefficient is 0.278 with $P > |z|$ 0.240. This means that toddlers who are boy will increase the likelihood of having malnutrition, although not significantly. Toddlers who are male have a 27% chance of being malnourished compared to toddlers who are girl.

While the lack of nutritional status shows that the boy dummy coefficient of 0.21 with $P > |z|$ 0.023. This means that toddlers of boy will increase the likelihood of having malnutrition, although not significantly. Toddlers of boy have a 21% chance of being malnourished compared to toddlers of girl.

Mother's education and nutritional status of toddlers

Based on the results of data processing shows that maternal education has a significant influence in reducing the likelihood of toddlers experiencing malnutrition and malnutrition. The longer mothers take education it will significantly reduce the likelihood of 6.9% of children under five experiencing malnutrition. Meanwhile, the longer mothers study, it will significantly reduce the likelihood of 3% of children under five suffering from malnutrition.

Educated mothers will learn about adequate nutrition every day which will greatly support growth and ease. Educated mothers will be better able to discuss health workers and actively seek sources of health information for women. Mother's education level will improve the attitude and mindset of mothers in considering food intake ranging from searching and receiving information about knowledge about baby's nutritional intake will influence the selection of foods that will determine the nutritional status of toddlers.

Family income and nutritional status of toddlers

Family income has an influence in reducing the possibility of toddlers experiencing malnutrition and malnutrition. On the status of malnutrition, family income has a coefficient (-0.241) with $P > |z| 0.177$. This means that toddlers living with families with higher incomes will reduce the likelihood of 24% of these toddlers experiencing severe malnutrition, although not significantly.

Whereas in the case of malnutrition status, it shows that family income has a coefficient (-0,194) with $P > |z| 0.005$. This means that toddlers living with families that have higher incomes will significantly reduce the likelihood of 19% of these toddlers experiencing undernourishment compared to toddlers living in lower income families.

High family economic factors will enable families to be able to give proper attention to nutritional intake of toddlers. The level of family income will affect the adequacy and quality of food for toddlers so that if the level of income is high then the quality of food will also be good and have an impact on the nutritional status of toddlers.

CONCLUSION AND SUGGESTION

Assuming all the other variables in the model do not change or are constant, thus showing that the factors that can reduce the likelihood of children under five suffering from malnutrition and malnutrition are 1. residential factors (urban or rural), 2. Mother's education (significantly reducing the likelihood of toddlers experiencing problems with malnutrition and malnutrition), and 3. Family income (significantly reduces the likelihood of children under five suffering from malnutrition). While gender factors indicate that male toddlers are likely to have malnutrition and malnutrition compared to female toddlers, although not significantly.

Efforts are needed to improve the health status and nutritional status of the community through community empowerment efforts. As for realizing the movement of healthy living communities (GERMAS) who are concerned with improving the quality of the environment, increasing prevention and early detection of disease, and providing healthy food and accelerating nutrition improvement.

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