

Social Economic Status and Stunting in Toddler

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Abstract— Stunting is a chronic malnutrition problem which can be evaluated by taking body measurements of height. Stunting is not only about short stature problem, but it is about bigger problems, namely cognitive and motor development problems in children. The objective of this study was to determine the relationship between socio-economic status with the prevalence of stunting among children under five years old. This was a quantitative descriptive study using a cross sectional approach with a total of 105 respondents. The data analysis was univariate and bivariate analysis using chi-square. The results of the study showed that the indicator of social status related to the prevalence of stunting is maternal education level. Other factors related to stunting include child's age and history of exclusive breastfeeding. The recommendations from this research are to promote the importance of exclusive breastfeeding and to improve parents' ability in providing and selecting nutritious food to prevent stunting or to catch up with the developmental milestones, especially in the case of stunting.

Keywords—stunting, socioeconomic status, exclusive breastfeeding, child's age

I. INTRODUCTION

Children under five years old are very vulnerable to health problems, considering the fact that they are in their golden period, i.e. a period where the brain develops very rapidly. Based on the assessment of nutritional status, there are some categories of Protein Energy Malnutrition (PEM) among children under five years old, namely underweight (low weight for age), wasted (low weight for height), stunted (low height for age) and overweight (overweight for height). Children under five who experience malnutrition problems such as wasted, stunted or over weight may result in disrupted or stunted growth which is irreversible [1].

Stunting is a condition of children under five years old who have low length or height for age. This condition is assessed by a length or height lower than minus two standard deviations of the WHO child growth standard median. Wasting, or low weight for height, is a strong predictor of mortality among children under five years of age. Wasted is caused by acute malnutrition and/or diseases. Overweight/obesity is a condition where the weight for height is $> 2SD$ [2].

Chronic malnutrition among children under five years old is a risk factor for decreased child survival, decreased health in childhood and adulthood, decreased learning capacity, and decreased productivity. Another study reported that mothers of low height also increase the risk of pregnancy and

childbirth problems which then increase the risk of maternal death as well as short-term and long-term disability [3]. Another impact is difficulty in achieving optimal cognitive and physical development [4].

The results of the Basic Health Research (Riskesdas) in 2018 conducted by the Institute of Health Research and Development (Litbangkes) showed a decrease in stunting prevalence, namely from 37.2% in Riskesdas 2013 to 30.8% in Riskesdas 2018. Meanwhile, the prevalence of children under five years old with wasted nutritional status in 2013 was 12.1% and decreased to 10.2% in 2018. Similarly, the prevalence of overweight children also decreased, i.e. 11.9% in 2013 to 8% in 2018 [3].

DIY Province is one of the most densely populated provinces with a total population of 3,842,932 people in 2019. This creates many population problems which influence the welfare of the population. In fact, Yogyakarta City is the narrowest region with an area of 32.5 km with a total population of 431,939 people [5]. The problems related to being a densely populated environment with poor sanitation are one of the causes of health problems, particularly related to chronic malnutrition in children under five. In fact, the nutritional status of children under five is one of the indicators of community welfare [6].

In 2018, the Provincial Health Agency of DIY Province reported that the number of stunted children under five years in DIY reached 12.37%, while the number of wasted children under five was 0.72% and the number of overweight children of the same age was 2.8%. Based on these percentages, Yogyakarta City ranked the highest in terms of overweight children compared to four other regencies in DIY province [6].

The fact that chronic malnutrition problems in Indonesia are high in number is influenced by a number of factors including male, preterm labor, length at birth, breastfeeding history, short maternal height, low level of maternal education, low economic status, poor sanitation such as the availability of latrines and clean water, residing in rural areas and inadequate access to health services. Nonetheless, the correlation with parents' education level, availability of clean water, and environmental sanitation is reported to have weak evidence [7].

Previous studies conducted in urban and rural areas in DIY province revealed that some of the risk factors for malnutrition in urban and rural groups are the age of children, the number of children under five years old in a family, male, history of non-exclusive breastfeeding,

maternal age under 35 years old, parents' occupation, parents' income, parents' education level and caregiver [8]

The government has designed nutrition-specific interventions and nutrition-sensitive interventions to reduce the number of chronic malnutrition problems, particularly stunting. Nutrition-Specific Interventions target the immediate causes of Stunting, including adequate food and nutritional intake, feeding, nursery and parenting, and treatment of infections/diseases. On the other hand, Nutrition-Sensitive Interventions target the indirect causes of malnutrition, for examples increasing access to nutritious food, raising awareness, commitment as well as mother and children feeding practices, increasing access and quality of nutrition and health services, and providing clean water and sanitation [3].

The Government makes some efforts to integrate some measures for handling chronic malnutrition problems, in this case stunting, by issuing Regulation of the Minister of Finance of the Republic of Indonesia Number 61/PMK.07/2019 on the Guidelines for Using Transfers to Regions and Village Funds to Support the Implementation of Integrated Stunting Prevention Interventions. This regulation mentions that the village government plays an important role in tackling Stunting issues by allocating their village budget to fund the coordination of inter-sectoral Integrated Stunting Prevention Interventions in the Village Budget and Expenditure in accordance with statutory provisions [9]. From the abovementioned background, the researchers were interested in examining the relationship between socioeconomic status and stunting.

II. METHOD

This was a descriptive study using a cross sectional approach. This study was conducted at Tegalrejo Public Health Center. The sample involved consisted of children aged 1-5 years old. The sampling was done using a consecutive sampling technique from 47 Posyandu under the coverage of Tegalrejo Public Health Center. There was a total of 105 respondents as the sample of this study. The data were collected when posyandu activities were carried out with the help of two research assistants who had first undergone apperception. The data collection processes started by obtaining permission from the public health center, followed by coordinating the posyandu schedule in December 2019 - February 2020. The research activities consisted of measuring children's body weight and height as well as assisting mothers in filling out the research questionnaire. In fact, the questionnaire did not pass any validity and reliability tests because the questions asked were only related to the daily activities of the respondents and their families. The variable used was the stunting variable and the stunting category was obtained from data calculation using the WHO Anthro application. The result was said to be stunted if the graph was below -2 Standard Deviation [10]. The supporting variable was the socioeconomic status variable, obtained from parents' education level, parents' occupations and household income. Household income was based on the amount of parents' income of which the income category referred to the Minimum Wage (UMK) in Yogyakarta City in 2020, namely IDR 2,004,000.00. Income of which the amount was the same as or below the minimum wage was considered as low income. In addition, the

collected data then underwent data cleaning, followed by manual coding using MS Excel and analysis using SPSS. The results of the analysis were then tabulated and discussed. The analysis consisted of univariate and bivariate analysis using chi-square.

III. RESULT AND DISCUSSION

Tegalrejo Subdistrict is one of the subdistricts in Yogyakarta City. This subdistrict has one puskesmas (public health center) and more than 50 posyandu (integrated health center). Posyandu in this region can be found in various levels, starting from posyandu pratama (basic integrated health center), posyandu madya (intermediate integrated health center) and posyandu purnama (primary integrated health center) and posyandu paripurna (plenary integrated health center). The activities carried out in each posyandu consist of five tables. Some of them are held together with Children's Family Development (BKB) activities.

TABLE I. CROSS TABULATION OF STUNTING WITH THE VARIABLE SOCIO-ECONOMIC STATUS

Variabel	Stunting		
	stunting	Normal	p value
Paternal Education			
Low	11	5	0.162
High	46	43	
Maternal Education			
Low	18	2	0
High	39	46	
Occupation of Mothers			
Not Working	33	28	0.561
Working	24	20	
Household Income			
Low	29	18	0.12
High	28	30	

A. Parents' Education Level

Table 3 shows that the level of father's education does not have relationship to the prevalence of stunting, but maternal education level has a significant relationship to the prevalence of stunting (p 0.000). This is in line with a previous study, showing that maternal education level is one indicator of the economic social status that contributes to the incidence of stunting [11]. A high level of education allows someone to easily absorb new knowledge and information and to be more oriented towards preventive measures than treatment. In addition, in terms of the utilization of health facilities, someone who has a high education level will be more aware, have more effective interaction, and find it easier to comply with any good advices given to her [12].

A highly educated mother has families with better health status because she knows and is able to prepare nutritious food for her family members. Some of the foods to be taken to prevent stunting are zinc supplementation and deworming tablets according to schedule and adequate iodine intake. Zinc supplementation taken since the age of 6 months can

prevent the incidence of stunting by 15% in each developmental age [13]. A deworming tablet is given because it can reduce the incidence of helminthiasis or worm infection that can be transmitted through soil media, something that is always close to children especially those living in rural areas. Chronic helminthiasis can increase the prevalence of stunting because it is a major cause of immunodeficiency, making someone more susceptible to infection (Numrampi et al., 2017). Iodine is one of the nutrients that can reduce the number of morbidity due to infection [13]. Even though the body contains very small amounts of iodine, i.e. approximately 0.0004% of the body weight or about 15-23 mg, it plays a pivotal role in the normal growth processes, including both physical and mental development. This is because iodine in the human body is mostly found in the thyroid gland (75%) and the remaining is found in other tissues (salivary glands, breast, stomach and kidneys). In fact, thyroid gland is one of the glands that play a role in human growth and development processes [15].

B. Parents' occupation

Other indicators of socioeconomic status are employment and household income. The results of cross-distribution as shown in Table 3 indicate that the mothers of 31.4% stunted children were unemployed, but this result was not statistically significant. This study is in line with a previous study, showing that there is no effect of maternal occupation with the prevalence of stunting, but children are at risk of overweight. One of the causes of being overweight is when children are given more calorie intake and various types of food from parents who are financially more stable [16]. Household income in this study did not have a significant relationship with the prevalence of stunting. In fact, this study is not in line with a previous study which revealed that the lower the income, the higher the prevalence of stunting (Martorell and Young, 2012).

C. Household Income

Household income has a proportional relationship with the provision of a safe and clean environment, adequate clean water and good sanitation. Environment, which comprises the availability of clean drinking water, good sanitation, and a healthy home condition with a closed toilet, will lower the prevalence of stunting among children under five years old. This regards the fact that poor sanitation will reduce food safety, thus increasing the risk of infection [17]. Infections can disrupt the absorption of nutrients in the digestive process of children under five years old. This condition will cause children to experience a weight loss. Weight loss accompanied by inadequate nutrient intake will result in chronic malnutrition that may lead to stunting [18]

IV. CONCLUSION

Socio-economic status has three indicators, one of which is maternal education level which is proven to have a statistical relationship with stunting. On the other hand, parents' occupations and household income do not have a significant relationship with stunting.

The results showed that the higher the maternal education level, the lower the possibility of stunting. Nevertheless, it is

necessary to balance maternal education level with efforts to increase knowledge to prevent and treat stunting by exclusively breastfeeding, giving foods with high nutritional values and providing healthy drinking water and environment for children under five years of age. In addition, it is also necessary to give zinc supplementations, iodine, and deworming tablets.

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