

The Relationships Breastfeeding, Weight, Sanitation to Stunting Event in Age 2-12 Years in Medan Tuntungan, Indonesia

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Abstract: **Background:** Stunting is a problem that occur in the world. Based on Riskesdas (Basic Health Research) Indonesia 2013 data, the incidence of stunting in Indonesia in children under five was 37.2% (18% very short and 19.2% short). This is a matter of concern because the impact of stunting can cause various physical and psychological disorders for the children. Therefore, the purpose of this study is to determine the factors that influence the occurrence of stunting, especially in children aged 2 to 12 years, in The area of Puskesmas Tuntungan Medan. **Methodology:** This research is an analytical descriptive with cross sectional approach done in Tuntungan Medan Health Center area. The sample size is 92 children selected by total sampling. The data used are primary data of height, weight, education and parental awareness and sanitation status obtained from questionnaire. **Results:** The result of this study indicates that the prevalence of stunting children is 33.7% (31 children). From the bivariate analysis of breastfeeding variable and sanitation variable, the obtained p value was 0,002 and 0,019. From the multivariate analysis, the variable that influence the incidence of stunting the most is the duration of breastfeeding (exclusive breastfeeding) with p value 0,007. The largest OR value obtained was 4.781. **Conclusion:** It can be concluded that from all the variables that cause stunting, which are duration of breastfeeding, birth weight, sanitation, education and income of the elderly, the breastfeeding variable is the most significant variable

1 INTRODUCTION

Stunting is a problem that is facing in this world. According to WHO 2012 data, there are 162 million children under 5 years old (toddlers) globally experience stunting (WHO, 2012). A person is said to be stunting if his height is based on age below the 5th percentile based on the Center for Disease Control and Prevention (CDC) curve (CDC, 2000)

Based on data from Global Nutrition Report (GNR) 2014, some countries that have been reported to have stunting incidents account for 40% such as Bangladesh, Cambodia, Ethiopia, Nepal, Yemen and Zambia. India is also one of the countries with high rates of stunting that is 38.8% (Data Rapid Survey Of Children [RSOC] in 2013 - 2014) (Hadad, et al, 2015)

Basic Health Research (Riskesdas) divides the classification of Height/Age indicators from WHO to 3, such as very short (Zscore <-3.0), short (-3.0 ≤

Zscore <-2.0) and normal (Zscore ≥ -2.0). Based on Riskesdas 2013 data, the incidence of stunting in Indonesia in children under five is 37.2% (18% very short and 19.2% short). Children aged 5-12 years are 30.7%, (very short 12.3% and 18.4% short). Children aged 13- 15 years are 35.1% (13.8% very short and 21.3% short). Children ages 15-18 are 31.4 percent (7.5% very short and 23.9% short). North Sumatra is one of the 15 provinces with a very short prevalence of children ages 5 - 12 over the national prevalence, with a short rate of about 18% and a very short 19% (Riskesdas/Annual Report, 2013)

Stunting in children is caused by lack of nutrition in pregnant women and less intake in infants and young children. Stunting can lead to short-term clinical manifestations of health in the form of increased mortality and morbidity, in the field of child development in the form of decreased cognitive, motor and language development, and also in the economy can increase spending on health costs.

Long-term clinical manifestations of health in the form of short stature, increased obesity, and decreased reproductive health, in the field of child development in the form of decreased learning capacity, and in the economic field can lead to decreased work ability and productivity (WHO, 2013)

Based on the background that has been described above and still not much research on stunting done in Indonesia in primary school age children, researchers want to do this research.

2 METHOD

The type of this research is descriptive research with cross sectional research design approach. This study was conducted on June 5, 2017 until June 22, 2017 in the neighborhood around Medan Tuntungan health center, Medan Tuntungan sub-district, Medan city. In this study the affordable population is the 2-12 year old people who live around puskesmas Medan Tuntungan, Medan Tuntungan district, Medan city.

In this research, the sampling is done by interviewing the parents or guardian and measuring the height and weight of the children aged 24 months to 12 years who live around the work area of Medan Tuntungan health center, Medan Tuntungan sub-district, Medan. The sample of the study was 100 people aged 2-12 years and willing to be the respondent in this research

This study used a questionnaire consisting of 24 questions measuring the knowledge of respondents who have been validated.

Data is processed using statistical methods with computer program and then presented in frequency distribution table.

3 RESULTS AND DISCUSSION

3.1 Univariate Analysis

Characteristics of respondents in this study were gender, occupation, last education, and income. The distribution of respondents based on these characteristics can be seen in Table 1 below

Table 1: Respondent Characteristic Distribution

Variable	n	%
Last Education		
Primary School	15	16,2
Junior High School	32	34,8
Senior High School	34	37,0
College	11	12,0
Gender		
Male	55	59,8
Female	37	40,2
Occupation		
Midwife	1	1,1
Laborers	5	5,4
Cleaning Service	1	1,1
Teacher	2	2,2
Housewife	43	46,7
Employee	1	1,1
Merchant	21	22,8
Teaching Religion	1	1,1
Farmer	1	1,1
Entrepreneur	16	17,4
Income		
< Rp.500.000		9,8
Rp. 500.000- 9		33,7
Rp.1.000.000		34,8
Rp 1.000.000-Rp. 31		21,7
1.500.000		
>Rp 2.000.000	32	
	20	

Table 2: Characteristic Respondent According to the Duration of Breastfeeding, Weight, Sanitation, and Height/Age Status

Variabel	n	%
Duration of Breastfeeding		
< 6 month	25	27,2
> 6 month	67	72,8
Birth Weight		
< 2,5 kg	11	12
≥ 2,5 kg	81	88
Sanitation		
Bad	50	54,3
Good	42	45,7
Height/Age Status		
Stunting	31	33,7
No Stunting	61	66,3
Total	92	100

Characteristics of respondents who most often in terms of senior high school followed by junior high school, elementary and college. From the characteristics of the sex of most children of male with mother as a housewife with income Rp. 1,000,000-Rp. 1.500.000.

This study showed that from 92 samples there were 25 children (27,2%) with breastfeeding time

under 6 months and 67 child (72,8%) with breastfeeding time above 6 months.

This study showed that of 92 samples there were 11 children (12%) with birth weight below 2.5 kg and as many as 81 children (88%) with birth weight equal to or above 2.5 kg.

This study shows that from 92 samples there are 50 children (54,3%) with poor sanitation status and 42 children (45,7%) with good sanitation status.

Table 5 results show that out of 92 samples there were 31 children (33.7%) with short stature for the age with Height/Age <5th percentile and 61 children (66.3%) with normal body height with Height/Age ≥ 5th percentile.

3.2 Bivariate Analysis

Bivariate results based on the research conducted are as follows.

Table 3. Cross Distribution Between Stunting and Breastfeeding Time

Breastfeeding Time	<6 bulan	>6 bulan	Total	p Value
Stunting	15	16	31	0,002
No Stunting	10	51	61	
Total	25	67	92	

Table 4. Cross Distribution Between Stunting and Birth Weight

Birth Weight	<2,5 kg	≥2,5 kg	Total	p Value
Stunting	5	25	31	0,289
No Stunting	6	56	61	
Total	11	81	92	

Table 5. Cross Distribution Between Stunting and Sanitation

Sanitation	Bad	Good	Total	p Value
Stunting	22	9	31	0,01
No Stunting	28	33	61	
Total	50	42	92	

Table 6. Cross Distribution Between Stunting and Education Category

Education	Low	High	Total	p Value
Stunting	16	15	31	0,559
Tidak Stunting	31	30	61	
Total	47	45	92	

Table 7. Cross Distribution Between Stunting and Income Category

Income	Low	High	Total	p Value
Stunting	26	5	31	0,257
No Stunting	46	15	61	
Total	72	20	92	

This study states that there is a relationship between the duration of breastfeeding and the incidence of stunting. This has been in accordance with pre-existing theory and research. According to previous study, the risk of stunting is 3.7 times higher in children who are not exclusively breastfed (ASI <6 months) compared to children exclusively breastfed (≥ 6 months) (Arifin, et al, 2015). This is because in infants with breastfed <6 months get less immune that is the content of breast milk and early exposure to complementary foods (Cruz, 2017). Besides immune also breast milk contains nutrients needed by children for growth. It is advisable to breastfeed for 6 months (Scherbaum, et al, 2016)

This study states that there is no relationship between birth weight with stunting events. This is not in accordance with the theory that has been there before. This study contradictive to previous study that 20% of stunting events stem from periods of growth during the intra-uterine period (Christian, et al, 2013) The relationship of low birth weight with the incidence of stunting is due to the low levels of nutrients needed for growth, such as vitamin A, zinc, and iron. Breast milk consist of that nutrient (Cruz, et al, 2017). Low birth weight is closely related to the low body mass index of the mother. Therefore, not only pay attention to child nutrition but also maternal nutrition should be noted (Akombi, et al, 2017). This may be due to the small number of samples compared with pre-existing studies and aims to determine the relationship between birth weight and stunting events.

This study states that there is a sanitation relationship with the stunting event. This has been in accordance with pre-existing theory and research. Food hygiene effect on stunting. Families who do not control food hygiene experience a stunting event 4.26 times higher than that of families who control food hygiene (Paudel, 2012) Poor food sanitation contributes to stunting events because poor sanitation can lead to an increase in infection cases. These infections will cause a decrease in nutrients for growth (Fregonese, 2016). Environmental sanitation also significantly affects the incidence of stunting in children. It is explained that the cause is due to poor sanitation causing the reduction of nutrients needed

for growth (Larsen, 2017). Therefore, it takes a preventive effort in the form of improvement of food and environmental sanitation in reducing the incidence of stunting (Fregonese, 2016)

This study states that there is no relationship between education status and stunting events. This is not in accordance with previous research that children of illiterate mothers are more likely to suffer stunting than a mother who can read. As many as 56, 2% of children suffering from stunting have illiterate mothers while 43, 8% of children suffering from stunting can read (Fikadu, et al, 2014). A good mother's education level has a large protective effect on the incidence of malnutrition in children. Not only maternal education, but the knowledge level of father is also influential. High education mother and father will automatically pay attention to health and family intake (Akombi, 2017).

This study states that there is no relationship between family income and stunting events. The results obtained in this study in accordance with previous studies which states that there is no relationship between the mother's work on stunting a events (Cruz, 2017). Previous research examined that mothers who work as traders and farmers are more likely to stunting than mothers who do not work (Housewife) (Fikadu, et al, 2014). The presence or absence of work and how much income affects the purchasing power of quality foods that can reduce the incidence of stunting (Akombi, 2017).

3.3 Multivariate Analysis

Table 8. Multivariate Result With Multiple Logistic Regression

Variable	Sig.
Income Category	0,356
Education Category	0,943
Breastfeeding Time	0,002
Birth Weight	0,384
Sanitation	0,025

Table 9. Multivariate Analysis Result With Multiple Logistic Regression

Subvariable	B	Wald	Sig	OR	CI 95%
Breastfeeding time	1,381	7,222	0,007	4,781	1,799-12,709
Sanitation	0,776	2,424	0,119	2,881	1,143-7,263

The multivariate analysis concluded that of all independent variables suspected to influence the most influential stunting incidence is the duration of breastfeeding (receiving exclusive breastfeeding)

with p value 0,007. The largest OR value obtained was 4,781, meaning that the duration of breastfeeding (receiving exclusive breastfeeding <6 months) had a 4.781 chance of occurring stunting events. This is in accordance with pre-existing data and theory. According to Arifin, the risk of stunting is 3.7 times higher in children who are not exclusively breastfed (breastfed <6 months) than children exclusively breastfed (≥6 months) (Arifin, 2015) Research conducted in Kota Banda Aceh states that the incidence of stunting is caused by low family income, non-exclusive breastfeeding, poor MP-ASI, incomplete immunization with the most dominant factor influencing is non-exclusive breastfeeding (Dinas Kesehatan Propinsi Sumatera Utara, 2014).

4 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this study, it was found that from 5 (five) variables studied were breastfeeding, birth weight, sanitation, education and income of parents, the variable length of breastfeeding was more significant cause stunting. Where is obtained odds ratio 4,781. This means that children who have a long history of breastfeeding (exclusive breastfeeding) less than 6 months tend to suffer stunting 5 times greater than those who get exclusive breastfeeding is about 6 months.

When viewed from the results of this study, parents are expected to pay more attention to the duration of exclusive breastfeeding for the baby to prevent the occurrence of stunting in children. As for health centers and health offices to further improve the program to increase knowledge of mother about stunting and the factors that influence it.

Researchers can further develop the results of this future research related to stunting with additional anemia variables, and learning achievement of children.

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