The Relationship Between the Nutritional Status of Pregnant Women, Infant Birth Weight and Stunting Incidence in Toddlers

Johanna Christy [1], Esraida Simanjuntak[2]

[1,2] Universitas Imelda Medan
Email corespondensi: johannachristy92@gmail.com

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Abstract

Stunting is still a major nutritional problem faced by Indonesia. The prevalence of stunting in North Sumatra ranks nineteenth at 21.1%. Mandailing Natal District has the highest prevalence in North Sumatra Province at 47.7%. This study aimed to determine the relationship between the nutritional status of pregnant women (LILA) and the birth weight of infants aged 6-36 months with the stunting process in the Working Area of the Kotanopan Health Center, Mandailing Natal. This type of research is observational with a cross-sectional study design with a sample of all infants aged 6-36 months at the Kotanopan Health Center, Mandailing Natal. This research was conducted in the Working Area of the Kotanopan Health Center, Mandailing Natal, in December-February 2023. The population in this study was all toddlers aged 6-36 months, totaling 1457 toddlers. The sample in the study was 97 toddlers. They collected data in this study using a questionnaire. The sampling technique uses simple random sampling—data analysis in this study with the Chi-Square test. The results of the study explained that there were 97 respondents for the category of nutritional status of pregnant women (LILA), and 34.0% of pregnant women experienced chronic energy deficiency. There were 25.7% of babies born with low birth weight (LBW) and 47.4% of babies experiencing stunting for the category of infant nutritional status based on height/age. The results of statistical tests showed that there was a significant relationship between the Nutritional Status of Pregnant Women (LILA) and stunting in infants (p=0.01) and birth weight in infants with stunting (p=0.02). Suggestions for health workers need to increase the provision of PMT to pregnant women to prevent an increase in the number of pregnant women suffering from CED in the working area of the Kotanopan Health Center, Mandailing Natal.

Keywords: Infant Birth Weight, Stunting, Upper Arm Circumference (LILA)

INTRODUCTION

Stunting is a physical growth disorder characterized by decreased growth velocity and is the impact of nutritional imbalances (Losong & Adriani, 2017). According to the World Health Organization (WHO), stunting is based on an index of body length for age (PB/A) or height for age (TB/A) with a z-score of less than -2 SD (WHO, 2014). The impact of growth retardation (stunting) in children under five includes short and long term problems, including increased mortality & morbidity, damage to children's cognitive, psychomotor & mental development, & adverse psychosocial functioning during adolescence (Setiawati, 2021). In addition, stunted children in adulthood tend to be more prone to degenerative diseases and have lower work capacity (Pulungan et al., 2020).

Stunting is still a nutritional problem in Indonesia that needs to be resolved. Stunting will cause long-term effects, disrupting physical, mental, intellectual, and cognitive development. Children affected by stunting up to age five years will be difficult to correct, so it will continue into adulthood and can increase the risk of offspring with low birth weight (LBW) (Loya & Nuryanto, 2017). Factors that influence stunting include low birth weight (LBW), lack of protein energy, chronic disease, inadequate food intake and lack of types of food, poverty and inadequate parenting styles (Supriyanto et al., 2018). Low Birth Weight (LBW) is defined by the World Health Organization (WHO) as a baby's weight at birth which is less than 2500 grams (Kamilia, 2019). Babies with LBW have a greater risk of death, developmental delays and growth compared to babies born with normal weight (Fitri, 2018).

Children born with LBW are caused by inadequate maternal intake during pregnancy resulting in inhibition of growth in children and frequent infectious diseases. If the mother's parenting style is not good, such as not giving exclusive breastfeeding at the age of 0-6 months and giving MP-ASI, not on time, the child will be at risk of experiencing stunting in the future (Dewi & Widari, 2018). This time is the process of stunting in children, and the chance of stunting increases in the first two years of life. This situation makes it even more difficult to deal with growth disturbances, ultimately leading to stunting (Antun, 2016). Stunting events that have taken place since childhood will have an impact in the future, which can cause disturbances in Intelligence Quotient (IQ), psychomotor development, motor abilities, and neurosensory integration, having an average IQ of 11 points lower than children who are not stunting (UNICEF, 2009).

Based on the Indonesian Nutrition Status Survey (SSGI) of the Ministry of Health, the prevalence of stunting under five in Indonesia will reach 21.6% in 2022. This figure is down 2.8 points from the previous year. There are 18 provinces with stunting under five prevalence above the national average. The remaining 16 provinces are below the national stunting rate average. Based on the Indonesian Nutritional Status Survey (SSGI, 2021).

According to EPPGBM (Electronic Community-Based Nutrition Recording and Reporting) data, the prevalence of stunting in North Sumatra has decreased by 4.7 percent, to 21.1 percent, from the previous 25.8 percent in 2021. Based on these data, the five regions with the highest stunting in 2021 2022, namely Mandailing Natal, is in the top position with 47.7 percent, followed by Padang Lawas at 42.0 percent, West Pakpak at 40.8 percent, South Nias at 36.7 percent, and North Nias 34.4 percent (Dinkes Sumut, 2020).

The government must prepare special steps to handle cases. The nutritional challenges experienced during the 1000 HPK period were divided from the time of pregnancy and up to

the age of two, one of which was perception, commitment, and coordinated concrete steps from stakeholders, especially local governments, to create a generation of Indonesians who are healthy, intelligent, and productive. To support efforts to improve nutrition, the government continuously and continuously carries out various efforts to accelerate and or save nutrition improvements, as well as mapping specific programs and interventions that involve various health sectors and sensitive interventions carried out in the form of activities in the community that can indirectly affect on nutritional status (BAPPENAS, 2013).

Based on the initial survey, the high stunting rate in the working area of the Kotanopan Health Center, Mandailing Natal was due to abnormal nutritional status; some pregnant women experienced Chronic Energy Deficiency (KEK) nutrition and had low birth weight babies (LBW) in infants.

Based on the description of the problem above, the researcher is interested in examining the relationship between the nutritional status of pregnant women and the baby's birth weight with stunting in the working area of the Kotanopan Health Center, Mandailing Natal.

METHODS

This research is an observational study with a cross-sectional study design. This research was carried out in the working area of the Kotanopan Community Health Center, Mandailing Natal Regency, from December 2022-February 2023.

The population in this study were all toddlers in the Kotanopan Health Center Work Area, Mandailing Natal Regency, with 1457 toddlers. The sample is 97 toddlers aged 6-36 months in the Working Area of the Kotanopan Community Health Center, Mandailing Natal Regency. The sampling method uses the Simple Random Sampling technique. Data was collected through interviews with mothers under five using a questionnaire. Data analysis was performed using Chi-Square analysis which was processed with the help of SPSS version 20 software.

RESULTS

The distribution and frequency of stunting in the working area of the Kotanopan Health Center, Mandailing Natal, can be seen in Table 1 below:

Table 1. Distribution and frequency of stunting events in the working area of the Kotanopan Health Center, Mandailing Natal

Variable	Frequency	%
Nutritional Status (TB/A)		
Normal	51	52.5
stunt	46	47.4
Total	97	100
Nutritional Status of Pregnant Women (LILA)		
KEK	33	34,0
Normal	64	65,9
Total	97	100
Baby's Birth Weight		
BBLR	25	25,7
Normal	72	74,2
Total	97	100

Based on Table 1. The study results showed that of the 97 samples, there were 51 people (52.5%) with normal nutritional status based on height/age and 46 people (47.4%) with stunting nutritional status. Of the 97 respondents in the category of Maternal Nutritional Status based on LILA, 33 people (34.0%) had KEK nutritional status, and 64 people (65.9%) had normal nutritional status. Moreover, of the 97 respondents for the Baby Birth Weight category, as many as 25 people (25.7%) had Low Birth Weight (LBW), and as many as 72 people (74.2%) were normal.

Factors related to stunting in the working area of the Kotanopan Health Center, Mandailing Natal, can be seen in Table 2 below:

Table 2. Factors related to stunting in the working area of the Kotanopan Health Center, Mandailing Natal

Variable	Toddler Nutritional Status (TB/U)				Toddler Nutritional		P-*value*
	Stunts		Normal				
	n	%	n	%	N	%	
Nutritional Status of Pregnant Women							
KEK	7	7,2	26	26,8	33	34	
Normal	44	45,3	20	20,6	64	65,9	0,001
Total	**51**	**52,5**	**46**	**47,4**	**97**	**100**	
Baby's Birth Weight							
BBLR	8	8,2	17	17,6	25	25,7	
Normal	43	44,3	29	30,0	72	74,3	0,002
Total	**51**	**52,5**	**46**	**47,6**	**97**	**100**	

Based on Table 2. The results of the study show that the nutritional status of mothers who are KEK with the nutritional status of normal children based on height/age is 7.2%, and the nutritional status of mothers who are KEK with the nutritional status of children based on height/age (stunting) is 26.8%. While the nutritional status of normal mothers based on LILA with the nutritional status of children based on height/age (normal) was 45.3%, and the nutritional status of normal mothers based on LILA with the nutritional status of children

based on height/age (stunting) was 20.6%. Based on the statistical test, it was obtained that the p-value = 0.001) was smaller than the α value (0.05), which meant that there was a relationship between the mother's nutritional status based on LILA and the incidence of stunting.

That children born with LBW with normal nutritional status based on height/age were 8.2%. Children with normal birth weight and babies with nutritional status based on height/age (stunting) were 17.6%. In comparison, babies born normal with normal nutritional status based on TB/U is 44.3%, and normal birth weight with the nutritional status of children based on height/Age (stunting) is 30.0%. Based on the statistical test, it was obtained that the p-value = 0.002, which is smaller than the α value (0.05), which means there is a relationship between the baby's birth weight and the incidence of stunting.

DISCUSSION

Based on the statistical test results, the value of p = 0.01 (<0.05) was obtained, which means that there is a significant relationship between the nutritional status of pregnant women based on LILA and the incidence of stunting in toddlers aged 06-36 months in the working area of the Kotanopan Health Center, Mandailing Natal Regency.

This research is in line with what was conducted in Aceh by Wahyuni et al. (2022) said that the percentage of pregnant women who experienced CED in early pregnancy had a significant relationship between the incidence of LBW (p-value = 0.000) where pregnant women with CED had a 4.317 times higher risk of giving birth to LBW compared to pregnant women who were not CED. Based on this, it is necessary to increase comprehensive early detection efforts for pregnant women by carrying out LILA measurements continuously, optimizing the treatment of pregnant women with Chronic Energy Deficiency (KEK) status. In research conducted by Ekowati et al. (2017), it was also found that Chronic Energy Deficiency (CED) increased the risk of giving birth to a child with LBW status by 5.6 times (OR=5.6; 95% CI: 1.41-22.57). Research conducted by Restu et al. (2017) also stated the same thing, namely that there was a significant relationship between CED in pregnant women with LBW with a value of p = 0.000, CED is a risk factor for LBW with a RR = 4.215 (RR > 1).

Based on the theory that supports the results of research conducted in the working area of the Kotanopan Health Center, Mandailing Natal Regency. The condition of pregnant women during their pregnancy is different for everyone, some are pregnant normally, and some have risk factors. One of the programs planned by the government in the world of health in the field of nutrition is "1000 Days Nutrition". This program aims to make people aware of the

importance of implementing nutrition in the first 1000 days of a child's life to achieve optimal growth and development. This program demonstrates the nutritional status of pregnant women because a child's life begins in the mother's womb (Pertiwi et al., 2020).

Based on the statistical test results, the value of p = 0.002 (p <0.05) was obtained, which means that there is a significant relationship between birth weight and the incidence of stunting in toddlers aged 06-36 months in the working area of the Kotanopan Health Center, Mandailing Natal Regency.

This research aligns with research conducted by Rahayu et al. (2015). Based on the results of multivariate analysis, it was found that LBW was the most dominant risk factor related to stunting. Children with LBW have 5.87 times the risk of experiencing stunting. The history of LBW has an important role in the incidence of stunting for children under two years old in the Sungai Karias Health Center area, Hulu Sungai Utara.

Several other studies have shown different results, as was done in Surabaya on factors related to the incidence of stunting in toddlers by Ni'mah & Nadhiroh (2022), who said that there was no significant relationship between low birth weight and the incidence of stunting in toddlers with a value (p = 1,000). In line with the results of research conducted by Nasikhah & Margawati (2012), they said that the risk factor for stunting in toddlers in East Semarang District where birth weight is not a risk factor for stunting with a value (p = 1.000). Likewise, the research results conducted by Hana & Martha (2012) 2012 regarding the risk factors for stunting in children 12–36 in Pati Regency showed that birth weight was not a risk factor.

Based on the theory that supports the results of research conducted in the working area of the Kotanopan Health Center, Mandailing Natal Regency, it is said that mothers who have nutritional status during pregnancy are less at risk of giving birth to children with low birth weight because low weight gain during pregnancy is at risk of giving birth to LBW babies. All babies born with low birth weight are grouped in the high-risk category of babies, such as being at risk of growth and development disorders. To minimize the risk of LBW, efforts are needed to maintain good nutritional conditions in the mother during pregnancy; improving nutritional status is important to improve the nutritional health of pregnant women and the fetus (Nirbita, 2012). Babies born with low birth weight (<2500) are three times more likely to experience growth and development delays than those born with normal birth weight (Boylan et al., 2017). Mothers who are malnourished or malnourished are at risk of giving birth to LBW babies because most mothers who experience KEK have LBW babies (Puspitaningrum, 2018).

CONCLUSION

The conclusions of this study are:

1. There is a relationship between the nutritional status of mothers during pregnancy (LILA) and the incidence of stunting in toddlers aged 6-36 months with a p-value = 0.001 ($\alpha<0.05$).
2. A relationship exists between a baby's birth weight and stunting in toddlers aged 6-36 months with a p-value = 0.002 ($\alpha<0.05$).

SUGGESTION

The suggestions for this research are:

1. It is recommended that health workers increase the provision of PMT to pregnant women to prevent more pregnant women with KEK in the working area of the Kotanopan Health Center, Mandailing Natal.
2. It is hoped that the Puskesmas health workers will immediately educate pregnant women who have children born with low birth weight because they are very at risk of stunting.

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