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Factors Related to the Event of Stunting in Toddlers Aged 24 – 59 Months in the Work Area of the Katobu Community Health Center, Muna Regency

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Abstract

One of the Sustainable Development Goals (SDGs) is to end hunger and all types of malnutrition by 2030 and to ensure that everyone has access to sufficient, safe, and nutritious food. Stunting, a developmental delay that often manifests itself in children older than 2 years old, is caused by persistent malnutrition throughout pregnancy and the first few years of life. In 2018, 27.7% of toddlers in Southeast Sulawesi were stunted, making it a significant public health issue. The goal of this study is to identify risk factors for stunting among children between the ages of 24- and 59-months old living in the catchment area of Katobu Health Center. Research method combining analytical observing with a case-control setup. Information collected via surveys, in-person interviews, the use of a height chart for children, and files from Katobu Health Center were analyzed. Birth weight and maternal upper arm circumference (LiLA) during pregnancy were not associated with a higher risk of stunting (each p value = 0.5). However, the odds ratio for stunting was significantly lower among children who were exclusively breastfed (p = 0.03). One of the ways to prevent children from becoming too short is to nurse them exclusively. Therefore, promoting advice on exclusive breastfeeding is important to improve toddlers' nutritional condition.

Keywords: Stunting, Birth Weight, Upper Arm Circumference (LiLa), Exclusive Breastfeeding

Introduction

Indonesia is a developing nation that faces a wide range of challenges, including those pertaining to nutrition. The fact that there has not been a discernible improvement in the nutritional condition of children in Indonesia is one of the reasons why the country's nutritional difficulties are still a matter for worry. According to the report published by UNICEF, millions of children and young people in Indonesia are still at risk of malnutrition due to factors including the high prevalence of stunting and wasted children, as well as the double burden of malnutrition in the form of undernutrition and excess nutrition (UNICEF, 2018).

One of the aims of the Sustainable Development Goals (SDGs) is the reduction of stunting, which is included in the second sustainable development goal, which is to end hunger and all kinds of malnutrition by the year 2030 and to ensure that food is available to everyone. The most common cause of stunting is chronic malnutrition, which may start as early as while the infant is still in the mother's womb and continue during the first few years of a kid's life. However, the condition doesn't often become apparent until the child is at least 2 years old. Therefore, stunting has an effect on disrupting brain development, intellect, delayed physical

growth, and impaired body metabolism, which causes the body to be more sensitive to sickness and increases the chance of acquiring diabetes, cancer, heart disease, and stroke (Kemendesa PDTT, 2017).

According to research conducted and compiled by the Globe Health Organization (WHO) in 2017, the incidence of stunting in toddlers was 22.2%, which equated to around 150.8 million children under the age of five all across the world. According to the World Health Organization (WHO), Indonesia is the third nation in Asia with the highest incidence rate of stunting in 2017. The information on Indonesian toddlers that are suffering stunting may be shown in table 1.

Table 1. Prevalence of Stunting in Indonesia from 2007 to 2018

Year	Prevalence of stunting (%)
2007	40,1
2010	39,2
2013	36,4
2015	29
2017	36,4
2018	30,8

Source: WHO, Ministry of Health of the Republic of Indonesia (Kemenkes RI), and Basic Health Research (Riskesdas), 2007-2018

According to data from the Indonesian Ministry of Health that can be seen in table 2, the prevalence of stunting in Southeast Sulawesi has become a public health problem. This is based on the fact that the incidence of stunting has increased.

Table 2. Prevalence of Stunting in Southeast Sulawesi

Year	Prevalence of stunting (%)
2015	31,4
2016	29,6
2017	36,4
2018	27,7

Source: Kemenkes RI, 2015 – 2018

At the moment, the government is working on combating stunting by implementing nutrition programs that are geared specifically on children in their first one thousand days of life (HPK). Some of the things that are done as part of particular nutrition interventions include giving pregnant women more food and promoting Early Initiation of Breastfeeding (IMD) as well as exclusive breastfeeding for the first six months after the baby is born (TNP2K, 2017).

Providing pregnant women with more food as part of an attempt to address the nutritional requirements of both mothers and newborns is one of the efforts being made, and it is anticipated that this will help pregnant women overcome chronic shortages in energy and protein. Chronic Energy Deficiency (KEK), which occurs throughout pregnancy, may lead to a number of complications for the developing baby, including starvation and a low birth weight, both of which, in the long run, can result in children having stunted growth (Infodatin Ministry of Health RI, 2015).

The circumference of the patient's upper arm is what should be measured to diagnose Chronic Energy Deficiency (KEK) in pregnant women (LiLA). In the context of providing healthcare to pregnant women, one of the components of action that must be carried out is the measurement of LiLA. As a result of the acceleration in fetal growth and development that occurs in the third trimester of pregnancy, it is essential to consume an appropriate amount of calories. Birth weight is directly related to the degree of nutritional sufficiency that exists

throughout pregnancy. According to the findings of research conducted by Mila Syari (2015) and Palino (2016), there is a significant relationship between low birth weight and stunting (p = 0.022). The risk of low birth weight was found to be increased by 76 times when there was an insufficient amount of energy intake.

Additionally, there is a correlation between exclusive breastfeeding and a reduced risk of stunting. The term "exclusive breastfeeding" refers to the practice of a woman giving her infant just breast milk during the first six months of their infant's life, without supplementing the diet with any other liquids or solid meals. Because breast milk includes nutrients that may help prevent infectious infections, it can also help lower the likelihood that a child would have growth abnormalities such as stunting.

Since 2018, the Katobu Health Center is one of the health facilities in the Muna Regency that has been participating in the collection of data on toddlers who are at risk of stunting. In 2018, there were 5 instances of toddlers suffering from stunting that were documented at the Katobu Health Center. This number increased to 8 cases from January to September of 2019. According to the findings of a study that was conducted by Marwati et al. (2017), 48 percent of pregnant women living in the same region as the Katobu Health Center were affected by SEZ, and 9.8 percent of newborns were delivered with a low birth weight (LBW). According to research conducted by Jihad et al. (2016), 35.4% of children under the age of five who received medical care at the Katobu Health Center did not get breastfeeding exclusively.

The researcher has an interest in conducting a study with the working title, "Factors connected to the occurrence of stunting in Toddlers Age 24 - 59 Months in the Work Area of the Katobu Health Center, Muna Regency." This interest is based on the phenomena that has been described above.

Methods

This research is a case control observational study that uses an analytic observational approach. The height (TB) of toddlers was measured with a microtoise, direct interviews were conducted, and questionnaires were filled out by mothers. These three methods were used to collect the data.

This study was conducted in the operating area of the Katobu Health Center in April 2020, during the time when the Posyandu implementation was taking place. All children between the ages of 12 and 59 months who lived in the Katobu Health Center Work Area in 2019 were included in this study's population. The sample for this study consisted of toddlers ranging in age from 12 months to 59 months, with a total of 34 toddlers. The case samples consisted of 17 toddlers who were stunted, while the control sample consisted of 17 toddlers who were normal and not stunted. The case group was comprised of all toddlers who were found to have stunted growth as a consequence of the findings of the researchers' measurements. On the other hand, the control group was comprised of toddlers who did not have stunted growth as a consequence of matching.

The analysis of data utilizes univariate analysis. This type of analysis is a data processing procedure that describes the data in tabular form, including categorical data, and searches for frequency and proportion, specifically pertaining to the demographic data of respondents. After that, we did a bivariate analysis, and the test we used to determine whether or not there was a significant relationship between the factors that contributed to the prevalence of stunting and each other was a Chi Square test with a significance level of 95% (p = 0.05). In the event that the criteria of the Chi Square test are not satisfied, the Fisher's Exact Test will be carried out. And last but not least, it will be subjected to multivariate testing. Finding out which

independent variable has the most significant link with the dependent variable is the goal of the multiple logistic regression test, which is performed as part of multivariate analysis

Results and Discussion

Based on the description of the research method above, it is known that there are 5 scientific articles that were selected as the main articles to answer the purpose of conducting article reviews. The results of the articles collected, the authors get an analysis of the results of several reference articles as contained in table 1 below:

Table 1. Characteristics according to age, gender, birth weight, history of exclusive breastfeeding, mother's upper arm circumference during pregnancy, and stunting incidence

Variables	Frequency (f)	Percentage (%)
Stunting events		
stunt	17	50
Normal	17	50
Age		
24-36	13	38
37-48	13	38
49-59	8	24
Sex		
Man	18	53
Woman	16	47
Birth weight		
LBW	3	9
BBLN	31	91
History of Exclusive Breastfeeding		
Exclusive breastfeeding	19	56
Not Exclusive Breastfeeding	15	44
Mother's Upper Arm Circumference		
KEK	3	9
Normal	31	91

Table 2. The Relationship between Birth Weight and Stunting

Birth Weight	Case		Control		Total		*p*	OR	CI
	f	%	f	%	f	%			
LBW	2	66,7	1	33,3	3	100	0,5	2,13	0,175-26,03
BBLN	15	48,4	16	51,6	31	100			
Total	17	50	17	50	34	100			

Table 3. The Relationship between Exclusive Breastfeeding History and Stunting Events

Exclusive breastfeeding	Case		Control		Total		*P*	OR	CI
	f	**%**	**f**	**%**	**f**	**%**			
Yes	**6**	**31,6**	**13**	**68,4**	**19**	**100**	**0,03**	**0,16**	**0,038-0,751**
Not	**11**	**73,3**	**4**	**26,7**	**15**	**100**			
Total	**17**	**50**	**17**	**50**	**34**	**100**			

Table 4. Relationship of Upper Arm Circumference (LiLA) of Pregnant Women with Stunting Events

Upper arm circumference	Case		Control		Total		*p*	OR	CI
	f	%	f	%	f	%			
KEK	2	66,7	1	33,3	3	100	0,5	2,13	0,175-26,03
Normal	15	48,4	16	51,6	31	100			
Total	17	50	17	50	34	100			

Birth Weight Analysis

According to Table 2, the vast majority of normal and stunted toddlers had normal birth weights (less than 2500 grams). According to the findings of Fisher's Exact, which were analyzed with a degree of confidence of 95%, it was discovered that there was no significant link between the incidence of stunting and birth weight (p = 0.5).

This conclusion differs with the findings of the study carried out by Kolbrek (2011) in Medan, which demonstrated that stunting in children under the age of five was connected with babies who were born with a low birth weight. According to a study that was conducted in Nepal by Paudel et al. (2012), the risk of stunting in toddlers with a low birth weight is 4.47 times higher than the risk of stunting in toddlers with a normal birth weight.

The baby's weight at birth is one sign of how healthy they are. The term "birth weight" refers to a measure that is often used to indicate the development of the fetal body throughout pregnancy. Babies that were born with a low birth weight will, in the future, be more vulnerable to the harmful effects of negative environmental factors (Umboh, 2013).

The results of this study did not show a relationship between low birth weight and the prevalence of stunting in children under the age of five; however, this could be due to a number of other factors that had a greater influence on the prevalence of stunting in children under the age of five, such as deficiencies in nutrition or infections (Kusharisupeni, 2002). Additionally, the effect of birth weight on height growth is greatest during the first six months of a toddler's life, which is the ideal time to improve their nutritional status. As a result, there is a chance that a toddler's height can grow normally and that they will not be stunted in their growth at a later age (Adair & Guiley, 1997).

Analysis Of Breastfeeding at Birth

According to Table 3, the percentage of children under the age of five who did not receive breastfeeding exclusively for the first six months was significantly greater in the stunting group (73.3%), as compared to the normal group (26.7%). The findings of the Chi Square test indicated that there was a correlation between the practice of exclusive breastfeeding and the occurrence of stunting (p = 0.03), and the odds ratio was 0.16. This result is consistent with the findings of the study that was conducted in Surabaya by Ni'mah and Nadhiroh (2015). That study found that children who were not breastfed exclusively for the first six months of their lives had a 4.643 times increased risk of not reaching their full height and weight potential.

The findings of interviews conducted with mothers of toddlers who participated in the research revealed that the reason why mothers did not give their children a diet consisting solely of breast milk was because there was either very little milk or none at all when the child was born, and as a result, the baby was given formula milk as a substitute. Additionally, early supplemental feeding with breast milk is offered because mothers are frightened that their babies would starve to death if they just get milk as nutrition.

Breastfeeding offers a multitude of advantages, including but not limited to the following: increased resistance to illness and ear infections in children, decreased instances of diarrhea and chronic constipation, and so on (Henningham and McGregor, 2009). An increase in the risk of stunting, particularly in early life, may be attributed to a lack of breastfeeding and early supplemental feeding (Adair and Guilkey, 1997). Because of the significant impact that breastfeeding has on the nutritional status of children, the World Health Organization (WHO) recommends that an intervention be implemented to increase the duration of breastfeeding for the first six months. This is one of the steps that must be taken in order to meet one of the WHO Global Nutrition Targets 2025, which is to reduce the number of children under the age of five who are stunted (WHO, 2014).

LILA Analysis

According to Table 4, 66.7% of women who encountered SEZ while pregnant had toddlers who experienced stunting, while 51.6% of mothers who did not experience SEZ while pregnant had toddlers who did not experience stunting. However, according to the findings of the Fisher's Exact test that was conducted with a level of confidence of 95%, it was discovered that there was not a significant relationship between the maternal upper arm circumference during pregnancy and the incidence of stunting ($p = 0.5$). This was the conclusion that was reached based on the findings.

The findings of this study contradict the findings of Sukmawati (2018), who found a correlation between the nutritional status of mothers as measured by LiLA and the prevalence of stunting in the work area served by the Bontoa Health Center in the Maros Regency. The researchers found that this correlation existed in the Bontoa Health Center work area. Ismi Trihardiani's (2011) research in Madiun found that pregnant women who experience Chronic Energy Deficiency (KEK) have an 8.24 times greater risk of giving birth to babies who are born with Low Birth Weight (LBW). This has the potential to have an effect on the prevalence of stunting in children in the future. The findings of a study that was carried out by Wellina et al. (2016) indicated that one of the variables that leads to stunting in children under the age of five is a lack of energy in pregnant mothers. The significance of this finding was found to be 0.001.

Women who are pregnant and have SEZ have the danger of having kids that are born with a low birth weight (LBW), and these newborns, if they are not appropriately treated, run the risk of being stunted as adults (Pusdatin Kemenkes RI, 2016). The satisfaction of both the mother's and the developing child's nutritional needs in the womb is the link between calorie intake and birth weight. If the requirements are satisfied, then the energy supply for physical activity, the development and repair of tissues, and the control of the metabolism will function at its highest level. The placenta produces fatty acids, cholesterol, and glycogen, which are then used to meet the energy needs of the fetus and to promote the growth and development of the fetus while it is still inside the mother's womb (Syafa'ah. H., 2016). The placenta is the means by which the fetus satisfies its requirements. In developing countries, babies with low birth weight (LBW) are more likely to experience intrauterine growth retardation, which occurs as a result of poor maternal nutrition and increased infection rates. This is in contrast to developed countries, where babies with LBW are less likely to experience intrauterine growth retardation. Babies that are born weighing less than the average amount (less than 2500 grams) may nonetheless have a body length that is normal at birth. A few months later, the child will begin to stunt, although the majority of the time, the parents are unaware of this fact. The parents of a kid with stunted growth don't find out about it until the child begins to socialize with other children and notices that their child is physically smaller than his or her peers.

In this particular research, the nutritional condition of the mother, as measured by the circumference of her upper arm when she was pregnant, was not shown to have a significant link with the prevalence of stunting in children under the age of five. This might be due to other variables that have a greater impact on the prevalence of stunting, such as ensuring that a newborn receives enough nourishment from the time it is born until it is an adult in order to prevent it from developing the condition. The first year of an infant's life, between the ages of 6 and 12 months, is a crucial time for their growth and development, both motorically and cognitively. At this point in time, it is necessary to take into consideration the fulfillment of the nutritional demands of newborns since doing so has an effect on reaching optimum levels of growth and development in the years to come. Newborns who consume a proper amount of nutrients have a lower risk of developing nutritional issues in the future, which may lead babies to fail to grow normally and become stunted (Adriani, 2014).

Conclusion

According to the results of the study, there was not a significant correlation between the prevalence of stunting and either the birth weight of the mother or the upper arm circumference of the mother while she was pregnant (each p value was equal to 0.5). On the other hand, there was a link that was shown to be statistically significant between exclusive breastfeeding and a decreased risk of stunting ($p = 0.03$), with an odds ratio of 0.16. This was found to be the case. This suggests that children who do not get all of their nutrients from breast milk alone have a 0.16 higher risk of developing stunting compared to newborns who obtain all of their nutrition entirely from breast milk.

Suggestion

Through activities such as nutrition counseling, the Community Health Center needs to increase the amount of knowledge that mothers of toddlers and their families who live within the Katobu Health Center's service area have regarding the benefits of exclusively breastfeeding their children and maintaining a healthy diet. It is expected that mothers and families of toddlers will be able to take an active role in the counseling activities that are provided in order to ensure that toddlers receive the appropriate amount of nutrition and that the growth and development process is carried out to its fullest potential. For the purposes of research, it can be continued by investigating additional factors that have the potential to influence the expansion and maturation of toddlers.

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