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Analysis Of The Incidence Of Stunting In Toddlers In Terms Of Basic Immunization Status, Exclusive Breastfeeding History And History Of Infectious Diseases In The Sigompul Health Center Work Area

[1]Maria Siahaan, [2]Renni Hutasoit, [3]Lasria Simamora
[1,2,3] Mitra Husada Medan Institute Of Health Science

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Email :
mariasiahaan12@gmail.com

ABSTRACT

Stunting or short is one of the indicators of chronic nutritional status that describes stunted growth due to long-term malnutrition. Riskesdas data in 2018 shows the prevalence of stunting toddlers in Indonesia is 30.8%. Conditions in Indonesia based on data from the 2019 Study of Nutritional Status of Toddlers in Indonesia (SSGBI) are still relatively high, where the prevalence of stunting is 27.67%, this figure shows that stunting in Indonesia is still higher than the prevalence in Southeast Asia of 24.7%. This study is an observational analytical study research using a retrospective case control study design. The research was conducted in the Working Area of the Sigompul Health Center, Humbang Hasundutan Regency, from April - July 2022. The sample size in this study was 18 people and a control sample was taken with a ratio of 1: 1, namely 18 people. So the sample size was 36 people. The sampling technique in this study is Consecutive sampling. The results showed that basic immunization status was associated with stunting with a p value of 0.002<0.05; history of exclusive breastfeeding related to stunting with a p value of 0.007<0.05 ; while History of infectious diseases is not related to stunting with a p value of 0.658>0.05. It is expected for health workers in the Sigompul puskesmas work area to promote socialization and counseling about exclusive breastfeeding as well as basic immunization programs.

INTRODUCTION

Stunting is a linear growth disorder caused by malnutrition, chronic nutritional intake or chronic or recurrent infectious diseases indicated by a z-score value of height according to age (TB / U) less than -2 SD. Children's Anthropometry Standards are used to assess or determine a child's nutritional status. Assessment of children's nutritional status is carried out by comparing the results of weight and length/height measurements with Child Anthropometric Standards.

Riskesdas data in 2018 shows the prevalence of stunting toddlers in Indonesia is 30.8%. Conditions in Indonesia based on data from the 2019 Study of Nutritional Status of Toddlers in Indonesia (SSGBI) are still relatively high, where the prevalence of stunting is 27.67%, this figure shows that stunting in Indonesia is still higher than the prevalence in Southeast Asia of 24.7% (Ministry of Health 2020). Based on data on the health profile of North Sumatra province in 2019, it is known that short toddlers (TB / U) in North Sumatra Province are 2.61%, where for the highest districts / cities the short toddlers are Gunung Sitoli (41.51%), West Nias (16.61%) and Samosir (11.97%). For Humbang Hasundutan Regency, is at 1.43% (North Sumatra Health Office 2019).

Stunting is not only a problem of impaired physical growth, but also causes children to get sick easily, besides that there are also disorders of brain development and intelligence, so stunting is a major threat to the quality of human resources in Indonesia (Ministry of Health RI. 2010). Toddlers or Baduta (Infants under the age of two) who are stunted will have a level of intelligence that is not optimal, making children more vulnerable to disease and in the future can be at risk of decreasing productivity levels. In the end, stunting will broadly hinder economic growth, increase poverty and widen inequality.

Stunting *can be caused by various factors, including low nutritional intake in the first 1,000 days of*

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life, namely from the fetus to the two-year-old baby. In addition, poor sanitation facilities, lack of access to clean water, and lack of environmental cleanliness are also causes of stunting. Poor hygiene conditions make the body have to extra fight the source of the disease, thus inhibiting nutrient absorption (P2PTM Kemenkes RI. 2018). In addition to the causes mentioned above, stunting can be influenced by various factors, such as Supariasa & Purwaningsih (2019) research which states that the causes of *stunting events* are based on the most influencing factors in order, namely: family income, exclusive breastfeeding, family size, education of toddler fathers, toddler father's work, nutritional knowledge of toddler mothers, family food security, education of toddler mothers, consumption levels toddler carbohydrates, accuracy of MP-ASI administration, toddler fat consumption rate, history of toddler infectious diseases, socio-culture, toddler protein consumption level, toddler mother's work, kadarzi behavior, toddler energy consumption level, and completeness of toddler immunization.

Likewise, research by Mizobe et al., (2013) on Factors Affecting the Incidence of *Stunting* in Children Under Five in Rural and Urban Areas, found that the factors that influence the occurrence of *stunting* in children under five in rural and urban areas are maternal education, family income, maternal knowledge about nutrition, exclusive breastfeeding, age of breastfeeding, zinc adequacy level and iron, history of infectious diseases and genetic factors. The purpose of this study is to analyze the relationship between the incidence of stunting in toddlers in terms of basic immunization status, exclusive breastfeeding history and history of infectious diseases in pregnancy in the Sigompul Health Center work area in 2022.

METHOD

This study is an observational analytical study using a retrospective *case control study design* which aims to determine the relationship between compulsory immunization, exclusive breastfeeding history and birth weight on the incidence of stunting in toddlers in the Sigompul Health Center Work Area in 2022. This study looked at the exposure that subjects experienced in the past (*retrospective*). Measurement of dependent and independent variables was carried out simultaneously at the time of the study using questionnaires and health worker records through diagnostic examinations and observations on respondents. The research was conducted in the Working Area of the Sigompul Health Center, Humbang Hasundutan Regency, which was carried out from March -May 2022. The case population in this study is all toddlers who are stunted in 2022 as many as 42 people. The determination of sample size refers to the *Odds Ratio (OR)* of previous research on stunting. In this study, the OR value of Exclusive Breastfeeding History was taken which was 4,643 (1,328-16,233) (Zurhayati and Hidayah 2015). Based on the calculation results, the sample in this study was 18 people, so the case sample was 18 people and a control sample was taken with a ratio of 1: 1, which is 18 people. So the sample size was 36 people. Data analysis is used to express the analysis of two variables, namely one independent variable and one dependent variable (Sastroasmoro, 2016). Bivariate analysis was performed using the *chi square statistical test* because the independent variable with the dependent variable is catagoric data. This bivariate analysis aims to analyze the incidence of stunting in terms of immunization status, exclusive breastfeeding and history of infectious diseases by comparing p values with alpha values ($p < 0.05$).

RESULTS AND DISCUSSION

Table 1. Frequency Distribution of Respondents Based on Independent Variables

Independent variables	Stunting		No stunting	
	n	%	n	%
Basic Immunization Status				
Complete	6	33,3	16	88,9
Incomplete	12	66,7	2	38,9
Total	**18**	**100**	**18**	**100**

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History of exclusive breastfeeding				
Exclusive	5	27,8	14	77,8
Non-Exclusive	13	72,2	4	22,2
Total	**18**	**100**	**18**	**100**
History of infectious diseases				
No history	14	77,8	16	88,9
There is a history	4	22,2	2	11,1
Total	**18**	**100**	**18**	**100**

Table 1 above shows that based on basic immunization status, 12 people (66.7%) in the stunting group did not get complete basic immunization. Based on the history of exclusive breastfeeding, more stunting groups were not exclusively breastfed by 13 people (72.2%). Based on the History of Infectious Diseases, in the stunting group, more children under five did not experience infection as many as 14 people (77.8%).

Table 2. Analysis of basic immunization status, history of exclusive breastfeeding, history of infectious diseases with stunting in the working area of the Sigompul health center in 2022

Independent variables	Stunting		No stunting		*p- value*	OR (95% CI)
	n	%	n	%		
Basic Immunization Status					0,002	0,06
Complete	6	33,3	16	88,9		(0,01 -0,37)
Incomplete	12	66,7	2	38,9		
Total	**18**	**100**	**18**	**100**		
History of exclusive breastfeeding					0,007	0,110
Exclusive	5	27,8	14	77,8		(0,02 -0,50)
Non-Exclusive	13	72,2	4	22,2		
Total	**18**	**100**	**18**	**100**		
History of infectious diseases						
Exist	4	22,2	2	11,1	0,658	0,438
None	14	77,8	16	88,9		(0,07 - 2,72)
Total	**18**	**100**	**18**	**100**		

Table 2 above shows that basic immunization status is associated with stunting with a p value of 0.002<0.05; history of exclusive breastfeeding is associated with stunting with a p value of 0.007<0.05; while History of infectious diseases is not related to stunting with a p value of 0.658>0.05.

Stunting analysis in terms of basic immunization status

The results of bivariate analysis showed that there was a relationship between basic immunization status and stunting with p values of 0.002 <0.05. The results of this study are in line with research conducted by (Wanda et al. 2021) which states that the history of basic immunization status in the incidence of stunting toddlers in Hegarmanah Village, Jatinangor District with a value of p<0.05 (p = 0.00<0.05) and there is a risk of stunting events in toddlers with incomplete immunization 4.9 times compared to toddlers with complete immunization. However, this result is different from research conducted by (Khairani and Effendi, 2020) which states that there is no relationship between basic immunization status (p = 1,000) and the incidence of *stunting* in toddlers at Posyandu, Ratu Samban District, Bengkulu City.

Immunization comes from the word immune, immune or resistant. The child is immunized, meaning given immunity to a certain disease. Children are immune or resistant to one disease but not

necessarily immune to another. Immunization is an effort to raise / increase a person's immunity actively against a disease, so that if one day exposed to the disease will not get sick or only experience mild illness. Vaccines are antigens in the form of microorganisms that are dead, still alive but weakened, still intact or parts of them, which have been processed, in the form of microorganism toxins that have been processed into toxoids, recombinant proteins which when given to a person will cause active specific immunity against certain infectious diseases (Ministry of Health RI. 2015).

The purpose of immunization is to reduce morbidity, death and disability due to Immunization-Preventable Diseases (PD3I). In addition to these goals, immunization is useful to prevent obstacles to children's growth and development until the age of three, namely, immunization of children against certain diseases at the right time and proper and correct feeding arrangements. With immunization, children are made immune to diseases that are easily suffered by children. Some literature states that basic immunization has several benefits for children's health, including: 1. To maintain the child's immune system. 2. To prevent dangerous infectious diseases 3. To keep the child healthy 4. To prevent disability and death. 5. To maintain and help the optimal development of children.

In the working area of the Sigompul health center, basic immunization is related to stunting with a p value of 0.002<0.05. Where it is known that of the 18 stunting sampled, there were 6 people who received complete immunization while 12 of them did not receive complete immunization, which is likely to be one of the factors causing stunting in toddlers.

Stunting analysis in terms of exclusive breastfeeding

The results of bivariate analysis showed that there was a relationship between basic immunization status and stunting with p values of 0.007 <0.05. The results of this study are in line with research conducted (Zurhayati and Hidayah 2015) which states that there is a relationship between exclusive breastfeeding and the incidence of stunting with an OR of 4,643. However, the results of this study are different from research conducted by (Pangkong 2017) which states that there is no significant relationship between exclusive breastfeeding and the incidence of stunting at the age of 13-36 months in the work area of the Sonder Health Center with a value with a p value of > 0.05, namely p value of 0.376.

Breast milk is an ideal source of nutrients and safe food for babies during the first 4-6 months of life. Breast milk is a traditional form and ideal to meet child nutrition. Breast milk can provide three-quarters of the protein needed by infants aged 6-12 months and is still a significant source for the next few months (Andriani Merianna. 2012). Exclusive breastfeeding is breastfeeding only until the age of 6 months (exclusive) without adding and/or replacing with other foods or beverages (Government of Indonesia. 2012).

Breast milk contains all the nutrients to build and provide energy in the required order. Breast milk does not burden the function of the digestive tract and kidneys and produces optimal physical growth. Many children aged less than two years are disturbed in growth and development due to malnutrition since in the womb, mothers do not obey exclusive breastfeeding, too early to provide complementary foods (MP-ASI) and MP-ASI consumed by children does not contain enough energy and micronutrient needs, especially iron (Fe) and zinc (Zn) (Andriani Merianna. 2012).

Breastfeeding alone that has been too long or more than 6 months is related to stunting. In this study there were 8 children who received breast milk alone until they were more than 6 months old. Children older than 6 months should have received MP breast milk to meet their nutritional needs, so that if not given MP breast milk can cause children to lose the opportunity to train the ability to receive other foods that cause growth faltering (failure to grow) because children experience nutritional deficiencies. In a study conducted by (Zurhayati and Hidayah 2015) stated that there is a relationship between the length of birth of toddlers, exclusive breastfeeding history, family income, maternal education and maternal nutrition knowledge on the incidence of stunting in toddlers.

Based on statistical tests conducted by the author, it was found that the variable exclusive breastfeeding was related to stunting with a p value of 0.007<0.05, where when compared to exclusive

breastfeeding for stunted toddlers, there were 13 out of 18 stunted toddlers who did not get exclusive breastfeeding. Likewise, in toddlers who are not stunted, more toddlers are exclusively breastfed as many as 14 toddlers.

Analysis of stunting in terms of history of infectious diseases

The results of bivariate analysis showed that the history of infectious diseases was not associated with stunting with a p value of 0.658>0.05. This study is in line with research (Khairani and Effendi, 2020) which states that there is no relationship between a history of infectious diseases (p = 0.228) and the incidence of stunting in toddlers at the Posyandu, Ratu Samban District, Bengkulu City. However, this result is different from research conducted by (Mizobe et al. 2013) which states that a history of infectious diseases with the incidence of stunting in children under five in rural and urban areas has a significant relationship, namely with pvalue values of 0.017 and 0.001 < α (0.05) respectively.

A disease caused by biological agents such as viruses, bacteria or viruses, not due to physical factors such as chemicals or poisoning is the definition of an infectious disease. Groups that are easily affected by diseases due to the imperfect antibody system so that infections that enter the body of toddlers affect their nutritional conditions. Therefore, prevention of the emergence of infections that can reduce nutritional disorders shown from the high incidence of short toddlers (BAPPENAS, 2011).

According to Proverawati, et al (2009) nutrition is very influential on the ease of a child getting infected. If the child has nutritional deficiencies, it will have an easy impact on whether or not it is easy to get an infection. Because nutrition contributes to a child's desire to eat, the loss of food through vomiting and loose stools and the child's eating metabolism. Not only that, the infection disrupts the normal immune system with the depletion of physical energy sources. The second factor that causes malnutrition is related to the rate of infectious diseases and poor health is infectious diseases. Developing countries such as Indonesia with low public awareness that have an impact on poor hygiene and endemic disorders of chronic infectious diseases. The interrelation of foodstuffs and infectious diseases affect each other. Toddlers who do not eat food that does not contain nutrients not in accordance with their bodies will have an impact on weak antibodies, making them vulnerable to health problems. Contrary to diarrhea or ARI which will cause the content of food substances difficult to enter the body. In general, the achievement of complete immunization in toddlers is closely related to the problem of infection. Not only that, the provision of drinking water sources and environmental sanitation as an indirect result of infectious disease disorders.

Based on statistical tests conducted by the author, a p value of >0.05 is 0.658, which means that a history of infectious diseases is not related to stunting in the Sigompul health center work area. If studied from the results of the questionnaire, it can be seen that in general, the history of infectious diseases in toddlers in both stunting and non-stunting groups is equally no history of infection, so that the results of the p value stadot test are greater than the significance level of 0.05.

CONCLUSION

From the results of statistical tests, it was found that basic immunization status was related to stunting with a p value of 0.002<0.05; history of exclusive breastfeeding is associated with stunting with a p value of 0.007<0.05; while History of infectious diseases is not related to stunting with a p value of 0.658>0.05. It is expected for health workers in the Sigompul puskesmas work area to promote socialization and counseling about exclusive breastfeeding as well as basic immunization programs.

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