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Article

Association Between Diarrhea History and Exclusive Breastfeeding with Stunting Incidence Among Toddlers at Mamsena Public Health Center, Insana Barat District, North Central Timor Regency

Roswita Sanit[1*], Daniela L.A Boeky[2]

[1] Public Health Faculty, Nusa Cendana University; witasanit043@gmail.com
[2] Public Health Faculty, Nusa Cendana University; adhe_0710@yahoo.co.id
* Correspondence: witasanit043@gmail.com

Abstract

Background: Stunting is a chronic malnutrition problem caused by insufficient nutritional intake over a long period of time due to the provision of food that does not meet nutritional needs. **Objectives:** The purpose of this study was to determine the factors associated with the incidence of stunting at the Mamsena Health Center, Insana Barat District, North Central Timor Regency. **Methods**: This type of research is an analytical study (survey) using a case control research design. The sample in this study amounted to 106 respondents consisting of 53 case samples and 53 control samples with a ratio of 1: 1. The sampling technique used was simple random sampling with the Lottery technique. Data were obtained from interviews using questionnaires with chi square statistical tests and odds ratio values. **Results**: The results of the study showed that the variables of infectious diseases and history of exclusive breastfeeding were related to the incidence of stunting in toddlers at the Mamsena Health Center, Insana Barat District, North Central Timor Regency. **Conclusion:** History of Infectious Diseases and History of Exclusive Breastfeeding are related to the incidence of stunting at the Mamsena Health Center, Insana Barat District, North Central Timor Regency. Suggestions for the Mamsena Health Center, Insana Barat District to continue to provide counseling on stunting and the importance of health promotion related to the prevention of infectious diseases in children needs to be improved again to overcome the problem of stunting in toddlers.

Keywords: stunting, nutritional intake, exclusive breastfeeding history, maternal nutritional status during pregnancy, birth weight

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1. Introduction

Stunting is a condition where a child's height is not proportional to their age. This occurs due to chronic lack of nutritional intake, especially in the first 1000 days of a child's life. Basic Health Research [1] noted that cases of Stunting in children decreased from 30.8% in 2018 to 20.6% in 2020 (a decrease of 12.2%). Although this figure has decreased, it is still very worrying when compared to the cut-off point for stunting prevalence in Indonesia and the World Health Organization [2]. The province with the highest percentage of very short and short toddlers aged 0-59 months in 2018 was East Nusa Tenggara, while the province with the lowest percentage was DKI Jakarta [1,3]. In 2018, NTT Province was

recorded as having 22 districts/cities with a stunting prevalence of more than 20%, and there were even 18 districts with a prevalence of more than 35%, one of which was TTU district [2,4,5].

Stunting will greatly affect physical health and also interfere with children's intellectual growth and development. The main factors that cause stunting problems are low birth weight, inadequate breast milk, inappropriate supplementary foods, recurrent diarrhea, and respiratory infections. Most children with stunting consume food that is below the recommended nutritional levels, come from poor families with large families, and live in suburban areas and rural communities. This problem occurs since the baby is in the womb and in the early period after the baby is born, however, stunting conditions only appear after the baby is 2 years old [6].

Parenting pattern factors (including meal times, processing methods, cleanliness, meal frequency, and amount of food intake), infectious disease history factors, exclusive breastfeeding history factors, maternal education level factors, maternal knowledge level factors about nutrition, childcare pattern factors about PHBS, and family economic status factors are factors that have been identified as factors causing stunting problems in a region including the province of East Nusa Tenggara [7].

Efforts to deal with stunting that have been carried out include Providing Additional Food (PMT) to Toddlers and Pregnant Women, Providing Iron Supplement Tablets (TTD) to adolescent girls and pregnant women, increasing the coverage of complete basic immunization in infants and toddlers, providing vitamin A to toddlers, and providing zinc in cases of diarrhea, especially in toddlers.

Data from the TTU Regency Health Office in 2020, the total number of stunted toddlers in TTU Regency was 5836 stunted toddlers, with a stunting prevalence of 28.9%. Of that number, Mamsena Health Center is ranked second with a fairly high prevalence of stunting from 24 health centers in North Central Timor Regency where the nutritional status of very short toddlers is 92 people, short 279 people, and the total stunted toddlers are 370 people with a prevalence of 42%. Based on the explanation above, the researcher feels the need to further research "Factors Related to Stunting Incidents at Mamsena Health Center, West Insana District, North Central Timor Regency."

2. Materials and Methods

2.1 Study Design and Setting

This study used a case control research method and was conducted at the Mamsena Health Center, Insana Barat District, North Central Timor Regency.

2.2 Population and Sampling

The population in this study was the case population, namely all toddlers who experienced stunting at the Mamsena Health Center, Insana Barat District, North Central Timor Regency, namely 370 stunted toddlers with an age range of 12-59 months, with a control population, namely all toddlers who did not experience stunting at the Mamsena Health Center, Insana Barat District, North Central Timor Regency, namely 511 toddlers with an age range of 0-59 months. The number of samples taken was 53 cases and 53 controls using the simple random sampling technique. Primary data collection was carried out by interviewing and measuring toddlers.

2.3 Data Collection

Primary data collection was conducted by interviewing and measuring toddlers. Data analysis used to test using univariate and bivariate analysis. The results of the study are presented in the form of tables and narratives.

2.4 Variables and Operational Definitions

This study uses variables including:

1. The dependent variable is the incidence of stunting: the child's nutritional status at the time of the assessment is in a condition where the height is not in accordance with the child's age

2. Independent variables such as:
   a) History of Infectious Disease (Diarrhea): the event of the child experiencing diarrhea in the past week
   b) History of exclusive breastfeeding: the event of the mother providing exclusive breastfeeding when the baby is 0-6 months old

2.5 Data Analysis

The statistical method used is descriptive study with univariate and bivariate analysis. The collected data will be analyzed with SPSS software using a significance threshold value of 95% ($p < 0.05$), and the applied Chi-square test.

2.6 Ethical Considerations

This research has gone through an academic review from the ethics committee of the Faculty of Public Health with approval number: 000108/KEPK FKM UNDANA/2022.

3. Results

3.1. Respondent Characteristics

The table shows that the average percentage of respondents' ages is in the 25-35 year age group more (64.15%) and the smallest age group is >45 years old as much as (0.94%), toddlers with sufficient carbohydrate intake are more (67.93%) compared to those with insufficient carbohydrate intake as much as (32.07%), toddlers with sufficient fat intake are more (66.98%) compared to those with insufficient fat intake as much as (33.02%), toddlers with sufficient protein intake are more (66.98) compared to toddlers with insufficient protein intake as much as (33.02%), toddlers with a history of infectious diseases (diarrhea) are more (59.43%) compared to toddlers who do not have a history of infectious diseases (diarrhea) as much as (40.57%), toddlers with a history of infectious diseases (ARI) are more (59.43) compared to toddlers who do not have a history of infectious diseases (ARI) as much as (40.57%), toddlers with a history of exclusive breastfeeding are more (89.62) compared to toddlers who are not given Exclusive breastfeeding as much as (10.38%), mothers with poor nutritional status during pregnancy were more numerous (65.09%) compared to mothers with good nutritional status as much as (34.91%), toddlers with normal birth weight as much as (91.51%) compared to toddlers with low birth weight as much as (8.49%).

Table 1 Respondent Characteristics Based on Age, Toddler Nutritional Intake, History of Infectious Diseases, History of Exclusive Breastfeeding, Maternal Nutritional Status during Pregnancy and Birth Weight.

No	Respondent Characteristics	Frequency (n)	Percentage (%)
1.	Mother's Age (Years)		
	a) <25	6	5,66
	b) 25-35	68	64,15
	c) 36-45	31	29,25
	d) >45	1	0,94
2	Carbohydrate Intake		
	a) Not Good	34	32,07
	b) Good	72	67,93
3	Fat Intake		
	a) Not Good	35	33,02
	b) Good	71	66,98
4	Protein Intake		
	a) Not Good	35	33,02
	b) Good	71	66,98

No	Respondent Characteristics	Frequency (n)	Percentage (%)
5	History of Infectious Diseases (Diarrhea)		
	a. Yes	43	40,57
	b. No	63	59,43
6	Medical History (ARI)		
	a. Yes	63	59,43
	b. No	43	40,57
7	History of exclusive breastfeeding		
	a. Yes	95	89,62
	b. No	11	10,38
8	Nutritional Status of Mothers During Pregnancy		
	a. Yes	37	34,91
	b. No	69	65,09
9	Birth Weight		
	a. Normal	97	91,51
	b. Abnormal	9	8,49
	Amount	106	100

3.2. Relationship Between History Of Diarrhea And History Of Exclusive Breastfeeding With The Incidence Of Stunting At Mamsena Public Health Center, Insana Barat District, North Central Timor Regency

The results of the analysis of the history of infectious diseases (diarrhea) with the incidence of stunting showed that toddlers with a history of infectious diseases (diarrhea) as many as 36 toddlers (83.72%) experienced stunting. The results of the statistical test of the study with chi square analysis showed that there was a relationship between the history of infectious diseases (diarrhea) and the incidence of stunting with a p-value = 0.000 <α = 0.05 and OR = 13.96 (5.211-37.211 and 95% CI) in the incidence of stunting who had a history of infectious diseases (diarrhea). This means that toddlers with a history of infectious diseases (diarrhea) are at 13 times risk of experiencing stunting compared to toddlers who do not have a history of infectious diseases (diarrhea).

Table 2 Relationship between history of illness (diarrhea) and the incidence of stunting at the Mamsena Health Center, West Insana District, North Central Timor Regency

History of infectious diseases (diarrhea)	Stunting events				Amount		*p-value*	OR(95% *CI*)
	Stunting		Normal					
	n	%	n	%	n	%		
a. Yes	36	83,72	7	11,43	43	100,0	0,00 0	13.916
b. Not	17	30,99	46	69,01	63	100,0		(5.211-37.165)

The results of the analysis between the history of exclusive breastfeeding and the incidence of stunting showed that 43 toddlers (45.26%) who received exclusive breastfeeding experienced stunting and 52 toddlers (54.74) who received exclusive breastfeeding did not experience stunting. The results of the analysis obtained a p value = 0.011 which is greater than α = 0.05 (p> 0.05) meaning that there is relationship between exclusive breastfeeding and the incidence of stunting in toddlers at the Mamsena Health Center, Insana Barat District, North Central Timor Regency.

Table 3 Relationship between history of exclusive breastfeeding and stunting incidence at Mamsena Health Center, West Insana District, North Central Timor Regency

History of infectious diseases (diarrhea)	Stunting events				Amount		*p-value*	OR(95% *CI*)
	Stunting		Normal					
	n	%	n	%	n	%		
a. Yes	43	45,26	52	54,74	95	100,0	0,011	9.619 (5.211-17.561)
b. Not	10	90,91	1	9,09	11	100,0		

4. Discussion

Relationship between history of infectious diseases and history of exclusive breastfeeding with the incidence of stunting at the Mamsena Health Center, Insana Barat District, North Central Timor Regency.

Diarrhea is a metabolic infectious disease whose impact can be seen in a short period of time which is marked by symptoms, namely the occurrence of feces/stool at least 3 times a day with a consistency of feces/stool that is softer or even becomes liquid, usually caused by E. Coli bacteria that are contaminated in food and drinking water or direct contact with sufferers and direct contact with animals that carry the bacteria [7]. Appetite in children who suffer from infectious diarrhea will decrease so that the amount of nutrient intake into the body will decrease which will cause impaired absorption so that nutrient intake is not met and there is a loss of nutrients in the body that occurs continuously and repeatedly. If this condition is not balanced with appropriate food intake, this will affect the child's growth process [4,8,9].

The results of the analysis for toddlers with a history of diarrhea at the Mamsena Health Center showed that there was a relationship between a history of diarrhea and the incidence of stunting at the Mamsena Health Center, Insana Barat District, North Central Timor Regency. Several causes of infectious diseases such as diarrhea and at the Mamsena Health Center, Insana Barat District occurred due to environmental sanitation conditions that did not meet requirements and poor personal hygiene, clean and healthy living behaviors that were not implemented significantly increased the incidence of diarrhea which had an impact on disrupted growth in children because children became anorexic or lost their appetite. The results of this study are in line with research conducted by [2,10–12] related to the Relationship between a History of Infectious Diseases and the Incidence of Stunting in Children Aged 12-59 months in the work area of the Rama Indra Health Center, Seputih Raman District, Central Lampung Regency, showing that there is a relationship between a history of infectious diseases and the incidence of stunting in toddlers. Children who have had a history of infectious diseases are 3 times more at risk of stunting than children who do not have a history of infectious diseases.

The results of the analysis show that exclusive breastfeeding is the factors related to the incidence of stunting at the Mamsena Health Center, Insana Barat District, North Central Timor Regency. Children who receive exclusive breastfeeding also experience stunting. This is because the mother's physical and psychological factors, both before, during pregnancy and while breastfeeding, including the fulfillment of maternal nutrition, affect the production, composition and quality of breast milk from the mother. The results of this study are in line with [13] which states that providing exclusive breastfeeding is not related to the incidence of stunting in toddlers, providing breast milk in combination with other foods and the mother's breast milk not flowing smoothly are the reasons for mothers not to provide exclusive breastfeeding to their children.

However, this study it's same the study conducted by [14,15] which showed that there is a relationship between exclusive breastfeeding and the incidence of stunting in toddlers. Exclusive breastfeeding has a very important role in preventing toddlers from experiencing stunting, breast milk given to children up to the age of 6 months in this case

is not giving other additional food to the child. In this study, mothers who did not provide exclusive breastfeeding to their children caused the child to experience stunting, not providing exclusive breastfeeding to children was also due to the lack of knowledge of mothers about exclusive breastfeeding.

5. Conclusions

In conclusion, history of Infectious Diseases and History of Exclusive Breastfeeding are related to the incidence of stunting at the Mamsena Health Center, Insana Barat District, North Central Timor Regency.

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7. Conflicts of Interest

The authors declare no conflict of interest.

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