JMCH Journal of Maternal and Child Health (2023), 08(01): 116-124
Masters Program in Public Health, Universitas Sebelas Maret

Research
Open Access

Relationships between Exclusive Breastfeeding, and History of Illness, and Stunting in Children Under Five

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Received: 10 December, 2022; Accepted: 6 January, 2023; Available online: 16 January, 2023

ABSTRACT

Background: Exclusive breastfeeding can affect a child's immune system against infectious diseases and malnutrition. Children under five who experience repeated infectious diseases and malnutrition will have the opportunity to experience stunting problems. Riskesdas (2018) shows that the prevalence of stunting under five in the Province of East Nusa Tenggara (NTT) is higher (42.6%) than the average prevalence of stunting in Indonesia (30.8%). The results of the initial survey found that the coverage of exclusive breastfeeding was very low and the morbidity rate for children under five was still high in the Working Area of the Kokar Health Center, Alor Barat Laut District, Alor Regency, NTT.
Subjects and Method: A case control study conducted in Adang Village, the work area of the Kokar Health Center, Alor Barat Laut District, Alor Regency in October-November 2021. The size of the study sample was 132 toddlers with 66 case samples and 66 control samples taken by simple random sampling. The dependent variable was the incidence of stunting. The independent variables were the history of exclusive breastfeeding and the history of illness. The analysis used is simple logistic regression analysis and followed by Odd Ratio (OR) analysis.
Results: The history of exclusive breastfeeding (OR=4.57; CI95%= 1.58 to 13.21; p= 0.003) and the history of illness (OR=5.33; CI95%= 2.53 to 11.24; p <0.001) were associated with the incidence of stunting. Further test results showed that every child under five who had a history of bad exclusive breastfeeding had a 4.5 times greater risk of experiencing stunting and a child under five who had a history of illness more often had a 5.3 times greater risk of experiencing stunting.
Conclusion: The incidence of stunting in the Northwest Alor District, Alor Regency, NTT Province is influenced by a history of exclusive breastfeeding and a history of infectious diseases or illness.

Keywords: history of exclusive breastfeeding, history of illness, incidence of stunting, infectious diseases, nutritional intake

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Cite this as:
Picauly I (2023). Relationships between Exclusive Breastfeeding, and History of Illness, and Stunting in Children Under Five. *J Matern Child Health*. 08(01): 116-124. https://doi.org/-10.26911/thejmch.2023.08.01.11.

BACKGROUND

Stunting (short) is a chronic condition that describes stunted growth due to malnutrition over a long period of time. Stunting

occurs when the fetus is still in the womb and only appears when the child is two years old. Malnutrition during the growth and development of children at an early age can hinder physical development, increase morbidity, hinder children's mental development and can cause death. Children who are stunted also face a great possibility to grow into adults who are unhealthy, lack education, are poor and are highly vulnerable to infectious diseases. This can have an impact on reducing the productive capacity of a nation in the future (TNP2K, 2018).

The highest proportion of stunting under five on the Asian Continent occurred in South Asia, which was 58.7% and the least occurred in Central Asia, which was 0.9% (WHO, 2018). Indonesia is one of the countries in the Southeast Asia Region and has a prevalence of stunting under five, which has decreased from 37.2% in 2013 to 30.8% in 2018. East Nusa Tenggara Province is the province with the highest stunting percentage in Indonesia from 51.7% in 2013 then decreased to 42.6% in 2018. Even though it has decreased, NTT is still at the top of the prevalence of stunting in Indonesia (Riskesdas, 2018).

The NTT province has 22 districts/ cities, of which 13 districts are included in the 100 priority districts for stunting management, including Alor District. The results of the Nutrition Status Monitoring (PSG) recapitulation through e-PPGBM show that the prevalence of stunting in Alor Regency in 2019 was 31.1%, decreasing to 11.5% in 2022. Despite this decrease, there are still sub-districts in this district where the prevalence of stunting is quite high, namely Alor District Northwest with a stunting prevalence of 20% in 2021 with a total of 344 stunting cases (Alor District Health Office, 2021).

The Kokar Health Center is located in the Northwest Alor District and is one of 36 health centers in Alor Regency which has a fairly high prevalence of stunting (37.1%) (Kokar Health Center, 2020). The working area of the Kokar Health Center consists of six sub-districts. Adang Village is one of the six villages with the highest stunting rate (43.5%) compared to other villages (Kokar Health Center, 2020).

The results of the initial survey revealed that stunting occurs due to several factors, including the mother's low education level, inadequate family income, low energy and protein intake, poor history of exclusive breastfeeding, and high history of infectious diseases. In addition, it is suspected that the stunting problem occurs because people still have beliefs (a culture of abstinence from food) that influence them in choosing and determining what food to consume. There are mothers who do not like to consume fish during pregnancy because they are afraid that their children will smell fishy, there are also pregnant women who do not consume large amounts of food because they are afraid that it will be difficult to give birth. One of these habits that may be the cause when children are born experiencing malnutrition. Based on the background above, this research was conducted with the aim of knowing the factors associated with the incidence of stunting in toddlers in the working area of the Kokar Health Center, Alor Barat Laut District, Alor Regency.

SUBJECTS AND METHOD

1. Study Design

This was a case control study conducted in Adang Village, the work area of the Kokar Health Center, Alor Barat Laut District, Alor Regency in October November 2021.

2. Population and Sample

The population in this study were all children under five, totaling 191 children spread across the Adang Village, Alor Barat Laut District, Alor Regency, with a case

population of 83 children under five and a control population of 108 children under five. The size of the research sample was 132 children under five with 66 case samples and 66 control samples taken by simple random sampling. The sampling technique uses probability sampling with simple random sampling technique. The data collection technique used was interviews and the instrument used in this study was a closed and structured questionnaire prepared by the research team.

Inclusion Criteria: children under five are detected according to the HAZ indicator per age, lower for stunted children and the HAZ indicator per age according to the WHO-NCHS provisions as normal children; children under five and mothers are in good health; the mother under five has been exposed to information related to stunting and is willing to become an informant.

3. Study Variable

The dependent variable was stunting. The independent were history of exclusive breastfeeding and history of illness.

4. Operational Definition of Variables

History of exclusive breastfeeding was children under five who have a history of or have received exclusive breastfeeding for six months.

History of illness (infectious disease) was total frequency of children under five suffering from or experiencing recurrence of types of infectious diseases (Influenza/ Cough/ Acute respiratory infection/ Pneumonia/ Diarrhea/ Malaria) in the last two weeks prior to being interviewed.

Stunting events was children under five who according to anthropometric indicators (height/length according to age) are not appropriate or shorter -2SD to -3SD according to WHO-NCHS provisions.

5. Study Instrument

The data of this research consisted of primary data and secondary data. The primary and secondary data collection techniques used were interviews and instruments using a closed and structured questionnaire prepared by the research team.

6. Data Analysis

Univariate analysis was carried out to see the frequency distribution and characteristics of the research subjects, while bivariate analysis was carried out using Chi square with a 95% confidence level (CI) to determine the effect of the independent variables on the dependent variable. Furthermore, to find out the magnitude of the influence between the independent variables on the dependent variable, it is continued with an analysis of the odds ratio (OR).

7. Research Ethics

This research has gone through a due diligence process by the Health Research Ethics Commission at the Faculty of Public Health, Nusa Cendana University with SK number: 215/UN15.16/KEPK/2021 and was declared eligible on September 21, 2021. Ethics Review Registration Number: UN02120300

RESULTS

1. Characteristics of the Family of Children Under Five

The family according to Duvall and Logan (1986) is a group of people with ties of marriage, birth and adoption which aims to create, maintain culture and enhance the physical, mental, emotional and social development of each family member. In a community ecosystem, the family has a variety of different backgrounds. Among others: the number of family members, education level, and level of welfare. The greater the number of family members, the greater the burden of economic responsibility that is borne and has an impact on the level of welfare of each family member. Table 1 shows a description of the families at the study locations.

Table 1 shows that the majority of sub-

jects have a low education level (60.6%) and income level (83.3%). On the other hand, the majority (84.9%) of children under five have a good history of exclusive breastfeeding but they often (60.6%) experience illness (infectious diseases).

Table 1. Distribution of children under five based on mother's education level, family income, history of exclusive breastfeeding, and history of illness (infectious disease) in the working area of the Kokar Health Center, Alor Barat Laut District, Alor Regency.

Variable	Frequency (N)	Percentage (%)
Mother's education level		
Low	80	60.6
High	52	39.4
Family Income		
Low	110	83.3
High	22	16.7
History of Exclusive Breastfeeding		
Not Exclusive Breastfeeding	20	15.1
Exclusive breastfeeding	112	84.9
History of Infectious Diseases		
Sick	80	60.6
No Pain	52	39.4

2. The relationship between history of exclusive breastfeeding and history of illness with insidence of stunting

The process of growth and development of children under five (6) months of age is highly dependent on the quality of the breast milk given. Children under the age of six (6) months have not received food from sources other than breast milk without any other food or drink supplements except medicine. After 6 months breast milk cannot meet the needs of minerals such as iron and zinc, so to meet these needs iron-rich (complementary food) must be given.

Akseer et al. (2020) and Vaivada et al. (2020) state that all types of food and the amount of food consumed have an impact on the quality of breast milk. Therefore, every breastfeeding mother must pay attention to the quality of their food consumption patterns. It is important for children aged 0-6 months to get exclusive breastfeeding to prevent babies from getting sick. This is because exclusive breastfeeding has an important role in increasing the baby's immune system. Therefore, it can prevent the baby from developing various diseases that can threaten the baby's health. The results of this study indicate that there is a relationship between the history of exclusive breastfeeding and the history of illness and the incidence of stunting (Table 2).

Table 2 shows that children under five who do not have a history of exclusive breastfeeding experience stunting events of 90% compared to those who have a history of exclusive breastfeeding. These results were reinforced by statistical studies which showed that the history factor of exclusive breastfeeding ($p=0.003$) was associated with the incidence of stunting. Likewise, Table 2 shows that children under five who have a history of illness (infectious diseases) experience a stunting incidence of 72.5% compared to children under five who do not have a history of illness. This is reinforced by the results of a statistical study which shows that the history factor of illness ($p<0.001$) is

related to the incidence of stunting. Based on the odds ratio value, it is known that these two factors can provide a greater risk of stunting events 4.57 times (OR= 4.57) compared to toddlers who have a history of exclusive breastfeeding and 5.333 times greater (OR=5.33) compared to children under five years who have a history of illness (infectious disease).

Table 2. The results of the analysis of the relationship between history of exclusive breastfeeding, history of illness (infectious diseases) and the incidence of stunting

Variable	Incidence of Stunting				Total		OR	(95% CI)	p
	Case		Control						
	N	%	N	%	N	%			
History of Exclusive Breastfeeding									
Not Exclusive Breastfeeding	18	90.0	2	10.0	20	100	4.56	3.67 to 12.41	0.003
Exclusive breastfeeding	48	42.9	64	57.1	112	100			
History of Infectious Diseases									
Sick	58	72.5	22	27.5	80	100	5.33	4.89 to 10.27	<0.001
No Pain	12	23.1	40	76.9	52	100			

DISCUSSION

Infectious diseases are very easy to happen to everyone. The transmission process is highly dependent on health conditions and adequacy of nutritional intake. Children are one of the groups most vulnerable to transmission of the disease. Indonesia is one of the countries that makes infectious diseases a major health problem. This is because the transmission of infectious diseases is very easy to occur. Thus, preventive measures need to be taken to limit the spread of the disease.

Handayani (2020) from the results of her research strengthens this research by stating that children under five with a history of infectious diseases have a 3 times greater chance of experiencing stunting. The infectious diseases that often attack children under five are ISPA, Diarrhea, and Pneumonia. Thus, stunting is not limited to being shorter than peers, but also more prone to disease. Subroto et al (2021) also stated that infectious diseases are associated with the incidence of stunting in toddlers aged 12-59 months in Lampung. It was explained that the high prevalence of diarrhea correlated with environmental sanitation conditions that did not meet the requirements and poor personal hygiene, limited sources of clean water, thus increasing the incidence of diarrhea which had an impact on disrupted growth in children because children became anorexic or lost their appetite (Setiawan, 2018; Vaivada et al., 2020).

Geographical and weather conditions in the Province of NTT including Alor Regency, which vary quite a lot in rainfall and unique natural topography, make it difficult to get access to health services, opening up opportunities for high incidence of infectious diseases. This is exacerbated by the low education level of housewives and low family income (Table 1). So that access to sufficient nutritious food and the amount of nutritional intake is very limited.

Stewart et al. (2013) and Beal et al. (2018) strengthen the results of this study by explaining that the growth and develop-

ment of stunted children is greatly influenced by various factors. Several dominant factors include insufficient nutritious food, exclusive breastfeeding and the incidence of infectious diseases. The three (3) factors are part of the social factors of society. Among others: political economic factors, health and health services, education, social culture, agriculture and food systems, as well as the availability of water, sanitation, and a good and clean environment. Alor Regency is one of the fisheries areas, so the pattern of eating fish strongly supports protein nutritional intake. However, based on the results of the analysis, it is known that a history of infectious diseases is associated with the incidence of stunting. This means that a high history of infectious diseases aggravates the absorption of protein nutrients as a result of the occurrence of infection in the body. In addition, researchers suspect that there is an incidence of helminthic infections which worsens the process of absorption of nutrients in the body.

The results of this study are in line with the results of Yulnefia and Mega Sutia's research (2022); UNICEF (2020); Subroto et al. (2021); Handayani (2020); Hina and Picauly (2021); Oktaviani (2021); Gaspers et al. (2020) and Sutarto et al. (2021) which prove that toddlers with a history of infectious diseases and a history of exclusive breastfeeding have a 3-5 times greater chance of experiencing stunting. The infectious diseases that often attack children under five are ISPA, Diarrhea, and Pneumonia. Thus, stunting is not limited to being shorter than peers, but also more prone to disease. Handayani (2020) and Gaspers et al. (2020) also confirmed that a history of infectious diseases related to stunting, namely diarrhea, ARI, worm worms and tuberculosis, is associated with the incidence of stunting. In addition, stunted children are at higher risk of developing degenerative diseases, such as cancer, diabetes and obesity. This is because the needs for micro and macro nutrients in the body are not fulfilled optimally so that the formation of body cell functions and others is not perfect.

The factors that most influence the incidence of stunting are: family income, exclusive breastfeeding, family size, education and occupation of the head of the family, nutritional knowledge of the mother under five, family food security, education of the mother under five, the level of consumption of nutrients, the appropriateness of giving complementary feeding, history of disease infection of children under five years old, social culture, occupation of the mother of the family, family behavior that is aware of nutrition, and completeness of immunization of children under five (Supariasa and Purwaningsih, 2019 and Hossain et al., 2017). The results of this review are in line with the findings in this study that the factors of low education and family income, the factor of poor exclusive breastfeeding, and the factor of a history of infectious diseases under five are related to the incidence of stunting (Min Yao et al., 2022). With low income will have an impact on the adequacy of nutritional intake in children.

The results of this study are in line with the results of a study in the Kupang Regency, NTT, which found that there was a significant relationship between the amount of nutritional intake and the incidence of stunting (Hina et al., 2020). The emergence of malnutrition is not only due to insufficient food intake, but also comorbidities. Children who get enough food through exclusive breastfeeding but are often sick can suffer from malnutrition. Likewise, children who do not get exclusive breastfeeding or adequate food, their immune systems will weaken and they will

be susceptible to disease (Sutarto et al, 2021; Agung et al, 2020, and Subroto et al, 2021). Malnutrition at an early age increases infant and child mortality, causes sufferers to get sick easily and has a body posture that is not optimal as an adult (Ministry of Health RI, 2020 and Toban et al., 2020).

The pattern of breastfeeding refers to the practice of breastfeeding in the first 6 months. The pattern of breastfeeding is divided into exclusive breastfeeding, predominant breastfeeding and partial breastfeeding (Riskesdas, 2018). The proportion of only breastfeeding in the last 24 hours in infants 0-5 months in the province of NTT including Alor District is still relatively low (<75%) or below the national target of 93%. This is thought to be one of the risk factors for stunting. This strengthens the results of research in Alor Regency which found that there was a relationship between exclusive breastfeeding and the incidence of stunting. In this study it was found that most of the children under five received exclusive breastfeeding well at the age of less than six (6) months or did not have a history of exclusive breastfeeding.

AUTHOR CONTRIBUTION

IP: conceptualized, designed and prepared the initial draft and framework, interpreted the data, data curated, formal analysis, methodology, supervision, writing – original draft, writing – review & editing

FUNDING AND SPONSORSHIP

This research did not receive a specific grant from a funding agency in the public, commercial, or not-for-profit sector.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

ACKNOWLEDGMENT

We thank database providers such as Bapelitbangda (BP4D) and the NTT Province Stunting Working Group Team.

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