

Factors Associated with Stunting in West Pasaman District, West Sumatera Province Indonesia

Sarah Saputri Tarigan¹, Arni Amir¹, Hafni Bachtiar³

¹Master of Midwifery Program, Faculty of Medicine, Universitas Andalas, Padang City, Indonesia

²Department of Public Health and Community Medicine, Faculty of Medicine, Universitas Andalas, Padang City, Indonesia

Corresponding Author: Sarah Saputri Tarigan

ABSTRACT

Background: Stunting is still a main problem in the Southeast Asia countries and especially in Indonesia. The aim of this study to determine factors associated with stunting in West Pasaman District, West Sumatera Province Indonesia.

Methods: The study was conducted using cross sectional comparative design. The populations in this study were mothers who have children aged 6-23 months, sample size 90 respondents consist of child stunting and normal. Sampling technique with proportional stratified random sampling. Data collection with questionnaire. Hypothesis test used Chi-square test. A two-tailed P -value of <0.05 was considered statistically significant. Multivariate analysis test used logistic regression.

Results: The results of the study known the association between exclusive breastfeeding, history of infectious diseases, mother's knowledge and economic status with stunting ($p < 0.05$). But there were not significant association between educational background, number of family members and health service with stunting ($p > 0.05$). Data analysis used logistic regression test found that a history of infectious diseases was the most dominant factor causing stunting ($OR = 7.38$).

Conclusion: This analysis confirmed history of infectious diseases dominant factors for stunting.

Keywords: Child, Infectious Disease, Indonesia, Stunting

INTRODUCTION

Child growth is internationally recognized as an important indicator of nutritional status and health in populations. Stunting is one of three anthropometric indices commonly used as an indicator for child growth. Stunting is still a main problem in the development of Indonesian children. Data known stunting is still high and highest in Southeast Asia at 30,8%. West Sumatera is one of province in Indonesia, that had stunting were 32%. This data showed stunting prevalence above national prevalence. [1] Stunting is a problem in the health sector because it has an impact on education, health, social, economic community and lifestyle of the

nation. Stunting can cause mortality and morbidity. [2]

Children hospitalized for severe malnutrition in early childhood have been reported to have problems with aggressive behavior, attention deficits, and poor social relationships. [3] Although stunted children have been found to have behavior changes in early childhood, such as less happiness and more apathy and fussiness, there has been little investigation of whether their later emotional and behavioral functioning is affected. [4]

The cause of stunting is very complex and multifactorial. Previous study results prove that the effect of heredity only contribute 15%. [5] Basic causes such as the

economic and political environment that underlies status socioeconomic, and the direct cause is inadequate food intake and infection. [6] The aim of this study to determine factors associated with stunting in West Pasaman District, West Sumatera Province Indonesia.

MATERIALS & METHODS

Study Design and Research Sample

The study was conducted using cross sectional comparative design. The populations in this study were mothers who have children aged 6-23 months, sample size 90 respondents consist of child stunting and normal. This study conducted in working area of primary health care Sungai Aur, West Pasaman District, West Sumatera Province Indonesia. Sampling technique with proportional stratified random sampling.

Operational Definitions

The variables of this study included independent variables were exclusive

breasfeeding, history of infectious diseases, mother's knowledge, educational background, number of family members, economic status and health service. Dependent variable was stunting.

Data Collection Technique

This study was approved by the Ethical Committee of Medical Faculty, Universitas Andalas. Quantitative study was done by collecting primary data taken with a questionnaire through structured interviews for the variables *i.e* exclusive breasfeeding, history of infectious diseases, mother's knowledge, educational background, number of family members, economic status and health service.

Data Analysis

The quantitative variables were recorded as frequency and percentage. Hypothesis test used chi-square test. A two-tailed *P*-value of <0.05 was considered statistically significant. Multivariate analysis used logistic regression. Data were analyzed using the SPSS version 21.0.

RESULT

Characteristic of respondents (Table 1).

Table 1: Characteristic of respondents

Characteristic		Stunting		Normal		Total	
		f	%	f	%	f	%
Sex of child	Male	25	56.8	19	43.2	44	100.0
	Female	20	43.5	26	56.5	46	100.0
Mothers age	High risk	10	45.5	12	54.5	22	100.0
	Low risk	35	51.5	33	48.5	68	100.0
Mothers of educational background	Low	27	52.9	24	47.1	51	100.0
	High	18	46.2	21	53.8	39	100.0
Mothers of working status	Work	35	50.0	35	50.0	70	100.0
	Not work	10	50.0	10	50.0	20	100.0

Table 1 known more than half of respondents have sex of child were male, low risk mothers age and low level of educational background. Half od respondennts were not working.

Table 2: Factors associated with stunting in West Pasaman District, West Sumatera Province Indonesia

Variables	Stunting						p-value
	Stunting		Normal		Total		
	f	%	f	%	f	%	
Exclusive breastfeeding							0.001*
Not exclusive	32	68.1	15	31.9	47	100	
Exclusive	13	30.2	30	69.8	43	100	
History of infectious disease							0.013*
Yes	16	76.2	5	23.8	21	100	
No	29	42.0	40	58.0	69	100	
Mother's educational background							0.671
Low	27	52.9	24	47.1	51	100	
High	18	46.2	21	53.8	39	100	
Mother's knowledge							0.011*
Low	32	62.7	19	37.3	51	100	
High	13	33.3	26	66.7	39	100	

Table to be continued...						
Number of family members						0.397
≥ 4	27	56.1	22	44.9	49	100
< 4	18	43.9	23	56.1	41	100
Economic status						0.035*
Poor	28	62.2	17	37.8	45	100
Not poor	17	37.8	28	62.2	45	100
Health service						0.756
Not good	7	58.3	5	41.7	12	100
Good	38	48.7	40	51.3	78	100

*p<0.05, statistically significant

Table 2 known the results of the study known the association between exclusive breastfeeding, history of infectious diseases, mother's knowledge and economic status with stunting ($p < 0.05$). But there were not significant association between educational background, number of family members and health service with stunting ($p > 0.05$).

Table 3: Candidate variables based on multivariate analysis

Variables	p	Status
Exclusive breastfeeding	0.000	Candidate
History of infectious diseases	0.009	Candidate
Mother's educational background	0.093	Candidate
Mother's knowledge	0.007	Candidate
Number of family members	0.291	Not candidate
Economic status	0.021	Candidate
Health service	0.537	Not candidate

Then the candidate variables will be analyzed simultaneously to find out which variable is the most dominant cause of stunting. The results of multivariate analysis (Table 4).

Table 4: Multivariate analysis

Variables	B	p value	OR	95% CI	
				Lower	Upper
Breastfeeding	1.791	.001	5.994	2.124	16.916
History of infectious disease	2.000	.003	7.388	2.008	27.177
Mother's knowledge	1.173	.023	3.231	1.177	8.871

Table 4 found data analysis used logistic regression test found that a history of infectious diseases was the most dominant factor causing stunting (OR = 7.38).

DISCUSSION

The results of the study showed the association between exclusive breastfeeding, history of infectious diseases, mother's knowledge and economic status with stunting. But there were not significant

association between educational background, number of family members and health service with stunting. Data analysis used logistic regression test found that a history of infectious diseases was the most dominant factor causing stunting (OR = 7.38).

Infectious diseases that are at risk at the first 2 years of age for stunting are diarrheal diseases and acute respiratory infections. In this study also found that most stunted children had suffered diarrhea or acute respiratory infections in the last 6 months compared to normal children. Incidence of infectious diseases that occur can be influenced by several factors such as parenting provided by mothers and poor environmental sanitation. It was found that mothers who did not maintain hand hygiene before and after feeding their children, the habit of defecating was not in the toilet because most families did not have a toilet. This incident is contrary to one of the focuses of the World Health Organization (WHO) campaign in reducing the incidence of infectious diseases such as diarrhea by getting used to washing hands with soap before eating. [5-7] The subject's environmental conditions are still classified as poor or do not meet health requirements, namely the problem of managing waste, garbage, latrines, and housing. Most subjects do not have good waste management. Household waste is discharged directly into rivers or into open areas and usually directly pollutes the soil. This of course can be a medium for spreading various diseases, especially diarrhea, a medium for the proliferation of pathogenic microorganisms, a breeding ground for mosquitoes, causing unpleasant

odors and an unpleasant sight as well as a source of water pollution, soil surface, and other living environments.

Subjects who do not have garbage bins in their homes and areas that are not covered by garbage trucks, tend to throw trash directly into rivers and swamps or vacant land in their yards. This has a negative effect if the rainy season arrives, the garbage will be scattered and the most potential as a growth medium for various germs. Environmental sanitation has a quite dominant role in providing an environment that supports the health of children under five years old. Personal and environmental hygiene play an important role in the emergence of disease. As a result of lack of cleanliness is a toddler will often get sick, such as diarrhea, worming, typhus, hepatitis, dengue fever, and so on. If children under five are often sick, their growth and development will be disrupted. Furthermore, infectious diseases in the body will have an influence on the nutritional state of children. As a first reaction to an infection is a decrease in the child's appetite so the child rejects the food given by the mother or caregiver. Rejection of food means reducing the intake of nutrients into the body of the child which will cause nutritional disorders. [7,8]

Lack of sanitation and environmental hygiene also triggers disruption of the digestive tract, which makes energy for growth diverted to the body's resistance to infection. [8] Another study found that the more often a child suffers from diarrhea, the greater the threat of stunting for him. [9] In addition, when children were sick, their appetite is usually reduced, so the nutritional intake is getting lower. So, the growth of brain cells that should be very rapid in the first two years of a child is inhibited. As a result, the child is threatened with stunting, which causes mental and physical growth to be disrupted, so that his potential cannot develop optimally. [9]

In accordance with the framework of the WHO theory in 2010, that the

emergence of malnutrition directly is not only caused by lack of food intake, but also because of infectious diseases. From various studies it has been known that there is a mutual relationship between malnutrition and various infectious diseases. [9,10] Malnutrition condition will make the immune system become weak and facilitate the entry of germs. Conversely, the presence of infectious diseases causes decreased appetite so that food intake is less, decreased absorption in the small intestine, increased catabolism, and reduced nutrients needed for tissue formation and growth.

CONCLUSION

The conclusion of this study confirmed exclusive breastfeeding, history of infectious diseases, mother's knowledge and economic status with stunting. Dominant factor for stunting was history of infectious diseases.

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