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Comparison of Antenatal Care Visits and Pregnancy Risks on the Incidence of Stunting in Toddlers in Linge District, Central Aceh Regency, Indonesia

Barirah Madeni[1]*, Hasritawati[1], Nizan Mauyah[1]

[1]Lecturer, Diploma of Midwifery Study Program, Politeknik Kesehatan Kemenkes, Aceh, Indonesia

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***Corresponding author:**
Barirah Madeni

E-mail address:
barirahmadeni@gmail.com

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A B S T R A C T

The problem of stunting is one of the nutritional problems faced in the world, especially in poor and developing countries. Worldwide, it is estimated that there are 178 million children under the age of five, or one in four children under five, experience stunted growth. Children who were stunted before the age of 2 had worse emotional and behavioral outcomes in late adolescence. Therefore, stunting results in poor quality of human resources, which will further affect the development of the nation's potential. This study aimed to identify a comparison of antenatal care and pregnancy risk for stunting in toddlers in Linge District, Central Aceh Regency. This study is a quantitative research using comparative studies. Comparative research is research that compares two or more symptoms. In this study, researchers compared antenatal care and pregnancy risk factors for stunting in toddlers in Linge District, Central Aceh Regency. The research subjects amounted to 60 respondents. This study shows that there are significant differences in ANC between mothers with stunted children and mothers with children who are not stunted in terms of the frequency of ANC visits and the availability of ANC services. Mothers with non-stunted children make more frequent ANC visits and receive more complete ANC services than mothers with stunted children. From the results of this study, it was also found that there was a significant difference between the education of mothers with stunted children and mothers with non-stunted children. There is a significant difference between the parity of mothers with stunted and non-stunted children. Mothers with stunted children have a higher parity than mothers with stunted children.

1. Introduction

Stunting is a chronic malnutrition problem caused by insufficient nutritional intake for a long time due to the provision of food that does not match nutritional needs.[1] Stunting occurs when the fetus is still in the womb and can be identified at the age of 2 years. The stunting can be known in toddlers when the length or height is measured, then compared with the standard, and the results are below normal.[1] Physically, toddlers who experience stunting will be shorter than toddlers of their age and have body proportions that tend to be normal, but the child looks younger/smaller compared to the child their age, and their weight is lower compared to their age.[2] According to WHO (2013)[2], the causes of stunting are comprehensively broken down into direct and indirect factors. Direct factors include lack of nutritional intake in infants, and indirect factors include risk factors that can cause stunting. Maternal factors are closely related to the cause of stunting in infants, including the mother's age during pregnancy, mother's height, mother's education, parity, and interval of pregnancy. These pregnancy risk factors greatly affect the health condition and development of the fetus and can cause low birth weight (LBW).[3]

The problem of stunting is one of the nutritional problems faced in the world, especially in poor and developing countries.[4] According to WHO, worldwide, there are an estimated 178 million children under the age of five, or one in four children under five,

experience stunted growth.[5] Indonesia is in the top five countries in the world with a high prevalence of stunting, and the prevalence of stunting in Indonesia is the highest compared to other countries in Southeast Asia. Stunting is a problem because it is associated with an increased risk of morbidity and mortality and sub-optimal brain development, so motor growth is delayed, and mental growth is stunted.[4] The incidence of stunting in children under five requires special attention because it is related to the risk of decreased intellectual ability productivity and increased risk of degenerative diseases in the future.[6] Several studies have shown the risk due to stunting, namely a decrease in academic achievement[7], increased risk of obesity[8], more susceptibility to non-communicable diseases[4], and an increased risk of degenerative diseases.[2] Therefore, stunting results in poor quality of human resources, which will further affect the development of the nation's potential.[9]

Another factor related to the incidence of stunting is ANC (antenatal care) visits. ANC is a service provided by health workers to mothers during pregnancy, including monitoring physical and psychological health, including fetal growth and development, in order to detect the risk of pregnancy complications and prepare for labor and birth so that mothers are ready to face their new roles as parents.[10] Every pregnant woman is very recommended to perform a comprehensive ANC examination qualified at least 4 times, namely 1 time in the first trimester, 1 time in the second trimester, and 2 times in the third trimester.[11] The problem of stunting is one of the nutritional problems faced in the world, especially in poor and developing countries.[12] According to WHO, worldwide, there are an estimated 178 million children under the age of five, or one in four children under five, experience stunted growth (IFPRI, 2014).[13] Indonesia is in the top five countries in the world with a high prevalence of stunting, and the prevalence of stunting in Indonesia is the highest compared to other countries in Southeast Asia. Based on the results of basic health research (Riskesdas), in 2013 in Indonesia, 37.2% of toddlers were stunted. It is known from the number of presentations that 19.2% of children are short, and 18.0% are very short. Children who were stunted before the age of 2 had worse emotional and behavioral outcomes in late adolescence. Therefore, stunting results in poor quality of human resources, which will further affect the development of the nation's potential.[12] This study aimed to compare ANC and pregnancy risk factors in mothers with stunted children and mothers with non-stunted children aged 2-5 years in Linge District, Central Aceh Regency.

2. Methods

Quantitative research design using comparative studies. Comparative research is research that compares two or more symptoms. In this study, researchers compared antenatal care and pregnancy risk factors for stunting in toddlers in Linge District, Central Aceh Regency. The research subjects amounted to 120 respondents. Selection of the sample under five is not using stunting purposive sampling, where sampling is based on criteria determined by the researcher. The number of samples of children under five who are not stunted uses the ratio of the group of children under five to stunting: the group of children under five who are not stunted, namely 1: 1. The data collection used is a questionnaire. Data collection was carried out by collecting primary data, namely data obtained directly from respondents or research subjects. Primary data was collected through questionnaires or direct interviews and direct measurements of the height of mothers and toddlers. Secondary data was obtained through data from the Linge District Health Center, Central Aceh Regency, Indonesia.

The instrument used in this research is a questionnaire. A data collection tool in the form of a questionnaire was made to determine the comparison of ANC and pregnancy risk factors for stunting in toddlers in Linge District, Central Aceh Regency, Indonesia. Data analysis in this study included univariate analysis. Data analysis was carried out by describing it descriptively to see the frequency

distribution of the variables studied, both independent and dependent. Univariate analysis was performed to determine the distribution of data frequencies for each test variable. Bivariate analysis was carried out to determine the relationship between the independent variables and the dependent variable using the Chi-square test with the SPSS program (statistical product and service solution), and the decision to test the hypothesis is based on the level of significance of 95% with a p-value <0.05.

3. Results and Discussion

The age characteristics of mothers with stunted and non-stunted children are mostly aged 20-35 years, namely 52 mothers with stunted children (86.7%) and 50 mothers with non-stunted children (83.3%). The characteristics of respondents based on occupations were obtained that all mothers, both mothers with stunted and non-stunted children, work as housewives, namely 60 people (100%). Characteristics of the education level of mothers with stunted children: The majority have a junior high school education, namely 38 people (63.3%), while the majority of mothers with non-stunted children have a senior high school education, namely 36 people (60%). The description of the characteristics of the toddler consists of age, gender, current weight, and current height. Based on the results of research that has been done, the majority of stunted and non-stunted toddlers are 3 years old. There were 24 mothers with stunted children (40%) and 20 people (33.3%) who were not stunted. The majority of children who are stunted or not stunted are male, namely 36 people (60%), while toddlers who are not stunted are 32 people (53.3%). The results of the study found that all stunted toddlers had BBL or normal birth weight, which ranged from 2.5 kg - 4 kg, namely 60 people (100%), and the majority of non-stunted toddlers had normal BBL as well, namely 56 people (93.3%). Based on the existing data, the height of the toddlers has been categorized into normal, short, and very short based on the WHO Z-score table (TB/U), so the research samples were obtained, namely 60 stunted toddlers and 60 toddlers who were not stunted.

Table 1. Frequency distribution of antenatal care visit characteristics and pregnancy risk on the incidence of stunting in toddlers.

No	Characteristics of respondent	Stunting		Not stunting	
		F	%	f	%
1.	Mother's Age				
	20-35 years	52	86,7	50	83,3
	<20 and >35 years	8	13,3	10	16,3
2.	Occupation				
	Housewife	60	100	60	100
	Civil servant/Indonesian National Army/National Police of the Republic of Indonesia	0	0	0	0
	Farmer	0	0	0	0
3.	Education				
	Primary school	12	20	2	3,3
	Junior high school	38	63,3	22	36,7
	Senior high school	10	16,7	36	60
	College	0	0	0	0
4.	Toddler gender				
	Male	36	60	32	53,3
	Female	24	40	28	46,7
5.	Toddler age				
	2 years	18	30	16	26,7
	3 years	24	40	20	33,3
	4 years	14	23,3	14	23,3
	5 years	4	6,7	10	16,7
6.	Birth weight				
	< 2,5 Kg	0	0	4	6,7
	2,5- 4 kg	60	100	56	93,3
7.	Toddler height				
	Normal	0	0	60	100
	Short	38	63,3	0	0
	Very short	22	36,7	0	0

Table 2. Frequency distribution of antenatal care visits and the availability of ANC services for stunting in toddlers.

No	Characteristics of respondent	Stunting		Not stunting	
		F	%	f	%
1.	ANC Visit:				
	> 4 times (complete)	22	36,6	56	93,3
	< 4 times (incomplete)	38	63,4	4	6,7
2.	Availability of ANC services:				
	High	32	53,3	56	93,3
	Low	28	46,7	4	6,7

The characteristics of ANC consist of ANC visits and the availability of ANC services. In this study, it was found that the majority of mothers with stunted toddlers made ANC visits <4 times, namely 38 people (63.4%) while the majority of mothers with non-stunted toddlers made ANC visits >4 times, namely 56 people (93.3%). In other words, mothers with toddlers who are not stunted make ANC visits more often. The majority of mothers with stunted and non-stunted toddlers had high availability of ANC services, namely 32 people (53.3%), while mothers with toddlers were not stunted, namely 56 people (93.3%).

Table 3. Frequency distribution pregnancy on stunting incidence in toddlers.

No	Characteristics of respondent	Stunting		Not stunting	
		F	%	f	%
1.	Recent education				
	-High (Senior high school, college)	10	16,7	36	60
	-Low (Junior high school, primary school)	50	83,3	24	40
2.	Mother's age at pregnancy				
	< 20 and > 35 years	6	10	4	6,7
	20-35 years	54	90	56	93,3
3.	Mother's height				
	<145 cm	10	16,6	4	6,7
	> 145 cm	50	83,4	56	93,3
4.	Parity				
	> 4 children	32	53,3	16	26,7
	< 4 children	28	46,7	44	73,3
5.	Birth intervals				
	< 2 years	8	13,3	2	3,3
	> 2 years	52	86,7	58	96,7

Description of pregnancy risk factor characteristics consists of mother's education, mother's age during pregnancy, mother's height, parity, and birth intervals. The results of the study showed that the majority of mothers with stunted children had low education, namely primary school and junior high school, as many as 50 people (86.7%), while the majority of mothers with non-stunted children had high school education, namely 36 people (60%). It was found that the majority of mothers with stunted and non-stunted children were aged 20-35 years during pregnancy, namely 54 mothers with stunted children (90%) and 56 mothers with non-stunted children (93.3%). The results of this study also showed that the majority of mothers with stunted and non-stunted children had a height > 145 cm, namely 50 mothers with stunted children (83.4%) and 56 mothers with non-stunted children (93.3%). The majority of mothers with stunted children have a parity of> 4 children, namely 32 people (53.3%), while the majority of mothers with non-stunted children have a parity of < 4 children, namely 44 people (73.3%). The results of the study also showed that the birth interval of mothers with stunted and non-stunted children was the majority with a birth interval of > 2 years, namely 52 mothers with stunted children (86.7%) and 58

mothers with non-stunted children (96.7%).

The results of data analysis using the Mann-Whitney test were carried out on research results to see differences in ANC visits to mothers with stunted and non-stunted children to obtain a significance p value= 0.00 ($p < 0.05$). So, it can be concluded that there is a significant difference in ANC visits between mothers with stunted toddlers and mothers with toddlers who are not stunted. The results of data analysis using the Mann-Whitney statistical test for a comparison of the availability of ANC services to mothers with stunted children and mothers with non-stunted children, a significant p-value = 0.00 ($p <0.05$) was obtained. So, it can be concluded that there is a significant difference in the availability of ANC services between mothers with stunted toddlers and mothers with non-stunted toddlers aged 2-5 years. Pregnancy risk factors were analyzed using the Mann-Whitney test consisting of the mother's education, mother's age during pregnancy, mother's height, parity, and birth interval. Maternal education between stunted and non-stunted mothers and children obtained a significant p-value of 0.00 ($p <0.05$). It can be concluded that there is a significant difference between the education of mothers with stunted children and mothers with non-stunted children. Maternal age during pregnancy between mothers with stunted and non-stunted children obtained a significant p-value = 0.64 ($p > 0.05$), so it can be concluded that there is no significant difference in gestational age between mothers with stunted children and mothers with non-stunted children stunting. From the results of the study, it was also found that the height of the mother between the mother and the stunted child and not stunted obtained a p-value = 0.23 ($p > 0.05$), so it can be concluded that there is no significant difference between the height of the mother and the stunted child and the mother with children are not stunted. Based on the results of data analysis for parity, the value is obtained p value= 0.03 ($p <0.05$). It can be concluded that there is a significant difference between the parity of mothers with stunted children and mothers with non-stunted children. Based on the birth interval, the p-value = 0.165 ($p > 0.05$), it can be concluded that there is no significant difference between the birth interval of mothers with stunted children and mothers with non-stunted children.

The availability of ANC services also greatly influences mothers to make ANC visits. If the mother gets quality service during pregnancy check-ups, then the mother will be motivated to make further ANC visits. It is said that ANC services are of good quality if they comply with predetermined standards such as weighing, measuring height, blood pressure, mid-upper arm circumference (MUAC), uterine fundal height, fetal heart rate (FHR), tetanus immunization, blood booster tablets, as well as laboratory test services, and nutritional counseling. This research is in line with other studies which say that there is a relationship between the availability of ANC services and the incidence of stunting. From the results of this study, it was found that 53.3% of mothers with stunted children received complete ANC services, while 93.3% of mothers with children who were not stunted. Furthermore, the results of statistical tests using the Mann-Whitney test were carried out on the research results obtained p value <0.05. These results indicate that there is a significant difference in the availability of ANC services between mothers with stunted children and mothers with non-stunted children aged 2-5 years.[13-20]

Education will affect a person's way of thinking, where someone with high knowledge will be able to make more rational decisions and generally be open to accepting changes or new things compared to individuals with low education. Based on the results of the questionnaire answers, it was found that mothers with high school education tended to have a better number of prenatal care. The results of the interviews also showed that mothers with higher education or high school started prenatal checks earlier than women with lower education. This research is in line with previous studies, which confirmed that there is a relationship between maternal education and stunting. The data shows that

the majority of mothers with stunted children have a junior high school education, 86.7%, while the majority of mothers with non-stunted children have a senior high school education, namely (93.3%). The statistical test results obtained a significance value of p <0.05, so it can be concluded that there is a significant difference between the education of mothers with stunted children and mothers with non-stunted children. Mother's height is an indicator that functions to predict children affected by malnutrition. Short mothers are one of the factors associated with the incidence of stunting. A woman who is less than 145 cm tall is more likely to have a narrow pelvis. Because of this, these women also have a higher risk of experiencing preterm labor and giving birth to a very small baby. Parity is the number of children ever born to both living and dead mothers, single births or twins. Too many children will result in competition for facilities and infrastructure, differences in food, and reduced childcare time, and will cause affection for children to be divided so that conditions will worsen if the family's economic status is classified as low. Previous research confirmed that there was a relationship between maternal parity and stunting. The more often pregnant women give birth, the closer the distance between pregnancy and birth, and the elasticity of the uterus is increasingly disturbed. As a result, the uterus does not contract perfectly, resulting in post-pregnancy bleeding and premature or low birth weight births, which will result in stunting in children. Birth interval is the time in years between the last birth and the current birth. The birth interval of children that is too close will affect the nutritional status of the family due to difficulties in taking care of children and not creating a calm atmosphere at home. Previous studies confirmed that there is a relationship between birth interval and stunting. If the children are too close or less than 2 years old, the uterus and the mother's health have not recovered properly. Mothers who give birth with a birth interval of 2 years are standard. If the interval of the children is too close or less than 2 years, the uterus and mother's health have not recovered properly.[21-26]

4. Conclusion

There was a significant difference in ANC for mothers with stunted children and mothers with non-stunted children, as seen from the frequency of ANC visits and the availability of ANC services. Mothers with non-stunted children make more frequent ANC visits and receive more complete ANC services than mothers with stunted children. There is a significant difference between the education of mothers with stunted children and mothers with non-stunted children. The majority of mothers with stunted children have junior high school education, while the majority of mothers with non-stunted children have high school education. There is a significant difference between the parity of mothers with stunted and non-stunted children. Mothers with stunted children have a higher parity than mothers with stunted children.

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