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RELATIONSHIP BETWEEN ANTENATAL CARE VISITS AND LBW WITH STUNTING INCIDENCE IN TODDLERS AGED 24-59 MONTHS IN THE WORKING AREA OF THE SITURAJA HEALTH CENTER SUMEDANG 2022

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ABSTRACT

Stunting was a condition of growth failure that occurs in toddlers due to long-term malnutrition that the children were shortest for their age. This study aims to determine the relationship between Antenatal care visits and Low Birth Weight to the incidence of stunting in toddlers aged 24-59 months in the working area of the Situraja Health Center in 2022. The research design was Case Control, with a study sample of 186 toddlers who were divided into the case group (93) and the control group (93). The sampling technique used is Proportional Random Sampling. The Maternal and Infant Cohort was chosen as the research instrument, with data analysis using Chi-Square. The results of data analysis showed that there was a significant relationship between ANC visits (p = 0.000; OR = 4,979) and LBW (p = 0.000; OR = 5,133) with the incidence of stunting in toddlers aged 24-59 months in the working area of the Situraja Health Center in 2022. For the Situraja Health Center to increase mentoring activities for women of reproductive age to perform early detection of stunting factors, intensive counseling about the importance of prenatal care, and providing additional food for pregnant women with CED.

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1. INTRODUCTION

Toddler is a term that comes from the abbreviation under five years. Toddler health is greatly influenced by the nutrients absorbed of their body. Toddlers who lack nutritional intake will be at risk of experiencing malnutrition, one of which is stunting. Stunting was a condition of growth failure that occurs in toddlers due to long-term malnutrition.[1] Toddlers were defined as stunted if their height for age was more than two standard deviations below the median WHO Child Growth Standards.[2] This situation was begins in the prenatal period resulting in low birth weight and continues to affect growth, especially in the first 2 years of life (Roediger, 2020).[3] They have a risk of experiencing delays in brain development which can lead to decreased intellectual abilities, productivity, and the risk of degenerative diseases in the future.[4]

Indonesia's stunting data ranks second in Southeast Asia after Cambodia. [5] Based on the results of the Indonesian Nutrition Status Study (SSGI) in 2021, the national stunting rate is 24.4%. There are several provinces in Indonesia which are the largest contributors to stunting, one of which is West Java with a prevalence of 24.5%.[6] Data published by the Sumedang District Health Office showed the percentage of

toddlers were stunted at 12.05%.[7] One of the contributors to stunting cases in Sumedang District is Situraja Sub-district as many as 135 toddlers aged 24-59 months with 23 very short categories and 112 short categories (Toddlers Weighing Month Results, 2022).[8]

Stunting is caused by many factors which are divided into direct and indirect factors among them are antenatal care (ANC) visits and low birth weight.[3] Antenatal care is a health service provided to pregnant women by professional health workers during pregnancy in accordance with antenatal care standards by conducting examinations and monitoring of pregnancy, as well as providing information to optimize the mental and physical health of pregnant women so that they face childbirth, postpartum, preparation for giving birth. breastfeeding, and the return of normal reproductive health. Antenatal visits are contacts between pregnant women and health workers who provide antenatal care to get a pregnancy checks. It aims to monitor and safeguard the wellbeing of the mother and foetus, detect any pregnancy complications and take necessary measures, respond to mother's complaints, prepare mother for birth, and promote healthy behaviors of mother.[9] Based on the "*Guidelines for Antenatal Care, Childbirth, Postpartum, and Newborns in the New Habit Adaptation Era, Revision 2*", the standard for antenatal care visits is a minimum of 6 examinations during pregnancy, and a minimum of 2 examinations by doctors in the first and third trimesters.[10] If the mother does not carry out antenatal care visits according to standards, the health of the mother and fetus is not properly monitored, so there is a risk of having stunting children. According to Lawrence Green in Notoadmojo (2016) Antenatal care visits by pregnant women are influenced by several factors including age, education level, parity, and knowledge.[11]

According to WHO, low birth weight (LBW) is a condition of infants with birth weight less than 2500 grams regardless of gestational age. In general, LBW is influenced by two factors, namely maternal factors and fetal factors. Maternal factors that affect LBW include maternal age during pregnancy (<20 years or >35 years and the distance between childbirth and pregnancy is too short), maternal condition (previous LBW history, working too hard, socioeconomic status, nutritional status), smoking, using drugs, alcoholics and mothers with health problems (severe anemia, preeclampsia, infections during pregnancy).[12] While fetal factors are caused by multiple pregnancies, hydramnios, chromosomal abnormalities, congenital defects and infections in the womb.[13] The growth and development of infants with LBW is slower and impaired because during pregnancy they experience intrauterine growth retardation and will continue until the next age after birth. They often fail to keep up with the rate of growth they should have achieved at their age. If this situation continues with inadequate feeding, frequent infections and poor health services can lead to stunting (Proeverawati and Ismawati, 2010).[14]

The achievement of antenatal care services can be assessed from the coverage of K1 and K4.[15] The results of interviews with the Coordinator of Midwives and Nutrition Practitioners of the Situraja Health Center in May 2022, showed that the coverage of antenatal care services in 2021 was still under target (K1=88.3%; K4=88.61%).[16] They also said that the coverage of low birth weight infants in 2021 increased to 5.6%.[17] Based on these data, stunting cases in toddlers aged 24-59 months in the working area of the Situraja Health Center in 2022 maybe caused by low antenatal care visits and high LBW cases. So the researcher is interested in conducting research on the relationship between Antenatal Care Visits and LBW with Stunting Incidence in Toddlers Aged 24-59 Months in the Working Area of the Situraja Health Center, Sumedang Regency in 2022.

2. METHOD

The design of this study used an analytic case-control study conducted by comparing the case group and control group based on their exposure status. Characteristics of case control research is the selection of research subjects based on the disease suffered to be observed whether exposed to risk factors or not. It can be used to assess the role of risk factors in disease occurrence (cause-effect relationship). This research uses an approach Retrospective where stunting is influenced by LBW factors and previous ANC visits. So that the independent variables in this study were antenatal care visits and LBW, while the dependent variable was the incidence of stunting in toddlers aged 24-59 months.

The population in this study were all toddlers aged 24-59 months who were weighed in the last one month in the working area of the Situraja Health Center amounting to 1,358. The research sample was 186 toddlers who were divided into a case group (93) and a control group (93) using the Proportional Random Sampling technique. According to Sugiyono (2014), Proportional Random Sampling is a sampling technique from members of the population using a random method without regard to the strata in the population. With this method the number of respondents per each village is multiplied by the number of samples required and the result is divided by the number of respondents from 15 villages.

The Maternal and Infant Cohort was chosen as the research instrument. Data analysis was carried out univariate and bivariate. Univariate analysis will produce a frequency distribution table. Meanwhile, bivariate analysis with Chi-Square test (p-value 0.05 interpretation and 5% precision) and Odds Ratio (table 2x2 and 95% CI) used SPSS for windows version 25.0 program.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1 Toddler Characteristics

Table 3.1 Characteristics of Toddlers in Research

Toddler Characteristics	n	%
Gender		
Male	90	48,4
Female	96	51,6
Total	186	100
Age		
2 – 3 years	58	31,2
3 – 4 years	79	42,5
4 – 5 years	49	26,3
Total	186	100

Based on table 3.1, it's known that most of the toddlers in this study were female as many as 96 people (51.6 %), and most of them were in the age range of toddlers 3-4 years as many as 79 people (42.5%).

3.1.2 Univariate Analysis

1. Description of Stunting Incidence

Frequency distribution of stunting in toddlers aged 24-59 months based on the characteristics of toddlers can be seen in the table below:

Table 3.2 Frequency Distribution of Stunting in Toddlers 24-59 months Based on the Characteristics of Toddlers

Characteristics of Toddler	Stunting Incidence				Total	
	Case		Control			
	n	%	n	%	n	%
Gender						
Male	41	44,1	49	52,7	90	48,4
Female	52	55,9	44	47,3	96	51,6
Total	93	100,0	93	100,0	186	100,0
Age						
2 – 3 years	33	33,5	25	26,9	58	31,2
3 - 4 years	45	48,4	34	36,6	79	42,5
4 – 5 years	15	16,1	34	36,6	49	26,3
Total	93	100,0	93	100,0	186	100,0

Table 4.2 showed that the most stunting cases occurred in female toddlers as many as 52 people (55.95%) and most suffered by toddlers aged 3-4 years as many as 45 people (48.4%).

2. Description of Antenatal Care (ANC) Visits

Frequency distribution of antenatal care visits for mothers toddler during pregnancy can be seen in the table below:

Tabel 3.3 Frequency Distribution of Antenatal Care Visits in Research

Antenatal Care Visits	n	%
Non-standardized	66	35,5
Standardized	120	64,5
Total	186	100,0

Table 4.3 showed that most of the toddler had mothers who made antenatal care visits according to the standard (at least 6 visits) during their pregnancy as many as 120 children (64.5%).

3. Description of Low Birth Weight (LBW)

Frequency distribution of toddlers based on history of LBW can be seen in the table below:

Table 3.4 Frequency Distribution of LBW History in Research

Low Birth Weight History	n	%
LBW	64	34,4
Not LBW	122	65,6
Total	186	100,0

Table 3.4 shows that most of the toddler in this study did not have low birth weight or were born with a weight of 2,500 grams as many as people 122 (65.6%).

3.1.3 Bivariate Analysis

1. Relationship between Antenatal Care Visits (ANC) with Stunting Incidence

The analysis results of antenatal care visits with stunting can be seen in the table below:

Table 3.5 Relationship between Antenatal Care Visits and Stunting Incidences in Toddlers Age 24-59 months

Antenatal Care Visits	Stunting Incidence				Total		OR 95 % CI	P-value
	Case		Control					
	n	%	n	%	n	%		
Non-standardized	49	52,7	17	18,3	66	35,5	4,979 (2,560-9,681)	0,000
Standardized	44	47,3	76	81,7	120	64,5		
Total	93	100,0	93	100,0	186	100,0		

Based on table 3.5, it's known that the case group of toddlers with mother who had a history of non-standard ANC visits (52.7%), compared to the control group (18.3%). The results of the Chi-Square statistical test obtained p value = 0.000 (p <0.05), so it can be concluded that there is a significant relationship between antenatal care visits and the incidence of stunting in toddlers aged 24-59 months in the working area of Situraja Health Center.

In addition, the results of the odds ratio calculation showed that toddlers whose mother have a history of antenatal care visits non-standardized have a 4.979-fold risk of experiencing stunting compared to toddler whose mothers have a history of antenatal care visits as standardized (95% C1 2,560 - 9,681).

2. Relationship between Low Birth Weight Infants with Stunting Incidence

The analysis results of relationship between LBW and stunting can be seen in the table below:

Table 3.5 Relationship between LBW and Stunting Incidences in Toddlers Age 24-59 months

LBW History	Stunting Incidence				Total		OR 95 % CI	P-value
	Case		Control					
	n	%	n	%	n	%		
LBW	48	51,6	16	17,2	64	34,4	5,133 (2,614-10,080)	0,000
Not LBW	45	48,4	77	82,2	122	65,6		
Total	93	100,0	93	100,0	186	100,0		

Based on table 4.6, it's known that in the case group there were more toddlers who had a history of low birth weight (51.6%), compared to the control group (17.2%). The results of the Chi-Square statistical test obtained a value of p = 0.000 (p <0.05), thus it can be concluded that there is a significant relationship between the history of LBW with stunting incidence in toddlers aged 24-59 months in the working area of the Situraja Health Center.

In addition, the results of the odds ratio calculation showed that toddlers who had a history of LBW are at risk of 5,133 times experiencing stunting compared to toddlers who didn't have a history of LBW (95% C1 2,614 – 10,080).

3.2. Discussion

3.2.1 Univariate Analysis

1. Description of Stunting Incidences

The table of stunting frequency distribution in toddlers aged 24-59 months based on the gender of the research subjects, it's known that there were more stunting cases in the female toddler group (55.9%) compared to male toddlers (44.1%). According to the age range of toddlers, stunting cases in the working area of the Situraja Health Center mostly occurred at the age of 3-4 years (48.4%), then toddlers aged 2-3 years (33.5%) and the least was toddlers aged 4-5 years (16.1%).

According to Ernawati (2020) toddlers aged 25-59 months are one of the groups of people who easily experience nutritional problems. The older the child, the wider the interaction with the environment. Children aged 3-5 years can play alone without the company of their parents. Parental control of poor hygiene will increase the risk of children getting infectious diseases such as diarrhea and ARI. Infectious diseases are highly contagious and attack children because they do not have a good immune system (Hermayani et al., 2020).[18] It will be at risk of causing stunting after going through several processes.

Both boys and girls have a risk of experiencing nutritional problems, especially stunting if the methods and practices in feeding are not appropriate and the mother's parenting pattern is not good (Adani et al., 2017).[19] The first things that toddlers need from their parents for their growth and development is the provision of nutritious food in order to get good physical and mental abilities, both in terms of quantity and quality. But along with the modernization process, the mother's parenting style in giving food to toddlers has actually changed and becomes less selective. Increasingly open access from cities to villages or otherwise, this could be one of the main reasons for the easy trade of instant food to the village. But in fact, the quality of instant food is currently being debated and is believed to lack good nutritional content such as containing artificial sweeteners, artificial coloring and even preservatives that are harmful to their body. If mothers continue to provide food to toddlers without paying attention to balanced nutrition, then toddlers are at risk of experiencing nutritional problems including stunting.

Researcher assume that stunting in toddlers in the working area of the Situraja Health Center is caused by parenting patterns in providing energy intake and weaning food. If the mother didn't pay attention to the diversity of food and the nutrients contained in it, it can make children quickly get bored with the menu and become lazy to eat. Many children are only given two or three types of food, so their nutritional needs are not met perfectly. This is considered more practical, easier, time-saving and cost-effective. In addition, health practices for toddlers such as being taught to wash their hands before and after eating or after defecating have not been fully implemented. If it's exacerbated by poor sanitation in the home environment, toddlers will be susceptible to infectious diseases that can inhibit the metabolic process of nutrients in their body.

2. Description of Antenatal Care Visits

The table of antenatal care visits frequency distribution in the working area of the Situraja Health Center based on univariate analysis was that there were 120 people with mothers who made ANC visits according to the standard (≥6 times). While toddlers with mother who did not meet the standard ANC visits (<6 times) only 66 people (35.5%).

Standard of ANC visits are at least 6 times during pregnancy, and at least 2 examinations by a doctor in the first and third trimesters. Health services obtained by mothers during ANC visits include anamnesis, monitoring the condition of the mother and fetus, recognizing high risks, advice and counseling in order to get a healthy pregnancy and baby. Pregnancy check-up is one of the health efforts aimed at early detection of complications during pregnancy that can prevent low birth weight infants which can cause stunting in children (Ramli, 2017).[20] This theory is proven by research by Zurhayati and Hidayah (2022) which showed that there was a significant relationship between ANC visits and the incidence of stunting (p-value 0.004) due to the large number of K1 (first visit of pregnant women) for pregnant women at five to seven months of gestation.[21]

3. Description of Low Birth Weight

The table of antenatal care visits frequency distribution in the working area of the Situraja Health Center based on univariate analysis showed that in the case toddlers with history of LBW as many as

48 people (51.6%) and those without history of LBW as many as 45 people (48.4%). While in the control group toddlers with history of LBW as many as 16 people (17.2%) and those without history of LBW as many as 77 people (82.2%).

According to WHO, low birth weight (LBW) is a condition of infants with birth weight less than 2500 grams regardless of gestational age. The growth and development of infants with LBW is slower and impaired because during pregnancy they experience intrauterine growth retardation and will continue until the next age after birth. They often fail to keep up with the rate of growth they should have achieved at their age. If this situation continues with inadequate feeding, frequent infections and poor health services can lead to stunting (Proeverawati and Ismawati, 2010).[14]

This theory is proven by research from Nainggolan (2019) which showed that there is a significant relationship between low birth weight and the incidence of stunting in children. The odds ratio value obtained is 25.5, it means that infants with low birth weight have a 25 times risk of experiencing stunting compared to infants with normal birth weight.[22] This is due to toddlers with low birth weight have a higher susceptibility to infectious diseases, diarrhea disorders and lower respiratory tract infections as well as an increase in complications including anemia, fatigue, and loss of appetite which can lead to suboptimal physical growth.

3.2.2 Bivariate Analysis

1. Relationship between Antenatal Care Visits (ANC) with Stunting Incidence

Based on the analysis results obtained from this study, it showed that there was a statistically significant relationship (p-value 0,000 <0.05) between Antenatal Care (ANC) visits with the stunting incidence in toddlers aged 24-59 months. The proportion of non-standardized ANC visits was more common in the case group (52.7%) compared to the control group (18.3%). ANC visits that non standardized may have a risk of 4.979 times experiencing stunting than non-stunted toddlers aged 24-59 months (OR; 95% CI 2.560-9.681).

Antenatal care is a health service for pregnant women to diagnose obstetric complications and to provide information about lifestyle, pregnancy and childbirth. It can be used to detect early occurrence of high risk pregnancy and childbirth so as to reduce maternal mortality and monitor the condition of the fetus. During the ANC visit, pregnant women will receive a thorough prenatal care, including nutritional counseling, providing folic acid and iron supplements, as well as proper health education. It can prevent mothers from getting anemia, prevent mothers from giving birth prematurely, and babies getting adequate nutrition while in the womb which can reduce the increase in the incidence of stunting in toddlers (Hutasoit et al., 2019).[23] This theory is proven by Permatasari's research (2019) which showed that there is a relationship between Antenatal care (ANC) visits with stunting incidence in children (an OR = 22.8), it means that mothers who did not meet the standard of ANC visit at risk of 22.8 times getting a child with stunting. If the antenatal care visit is non-standardized, the health of mother and fetus is not properly monitored, so there is a risk of having a stunted child.[3]

Researcher assume that the low coverage of antenatal care visits in the stunting toddler group in the working area of the Situraja Health Center is influenced by government policies against the Covid-19 pandemic in 2020-2021 and there are still many cases of Unwanted Pregnancy that occurred in the past 2 to 3 years. ANC services during the pandemic experienced obstacles due to a shift in health system resources towards controlling Covid-19 as well as a shortage of medicines and essential supplies for the provision of routine MCH services. The high risk of spreading the Covid-19 virus in health services has resulted in health facilities making adjustments and restrictions on service operations, including antenatal care services. This causes antenatal care visits to decreased because pregnant women didn’t want to visit health services due to anxiety and fear of contracting Covid-19. Some cases of unwanted pregnancy are caused by mothers not using any type of contraception (unmeet KB) and teenage premarital pregnancies. Women who experience an unwanted pregnancy are usually late for a prenatal check-up and do it once only when they are sick, this is because they feel ashamed and afraid to report it. Whereas unwanted pregnancy requires good ANC to prevent maternal and infant mortality.

2. Relationship between Low Birth Weight Infants with Stunting Incidence

Based on the analysis results obtained from this study, it showed that there was a statistically significant relationship (p-value 0,000 <0.05) between low birth weight (LBW) with stunting incidence in toddlers aged 24-59 months. Toddlers who had a history of LBW in the case group more (51.6%) compared to the control group (17.2%). Toddlers with history of LBW may have a risk of 5.133 times experiencing stunting than those who not stunted at the age of 24-59 months (OR ; 95% CI 2.614-10.080).

Low birth weight is a picture of public health malnutrition including long-term malnutrition, poor health, work hard and poor health care and pregnancy. Individually, LBW is an important predictor of the health and survival of newborns and is associated with high risk in children (Kemenkes RI, 2010).[24] Birth weight in general is closely related to long-term growth and development. Thus, the continued impact of LBW can be in the form of failure to growth (growth faltering). A baby born with LBW will find it difficult to catch up with early growth lags. Growth that lags behind normal will cause the child to become stunted (Oktarina, 2012).[24]

This theory is proven by research from Arie, et al (2022) which showed a relationship between Low Birth Weight (LBW) with stunting incidence at the Nosarara Public Health Center Palu with a p value of 0.0001 (p value <0.05).[25] In Lidia Fitri's research (2018), the factors that cause low birth weight babies are caused by the nutritional status of the mother during pregnancy. [26] Mothers who are malnourished at the time of entering the third trimester are likely to give birth to babies with low birth weight. In another study it was also explained that poor fetal growth in the first 2 years of life causes permanent damage, including height, brain growth that is not optimal (Aryastami et al., 2017).[27]

Researcher assumed that the high cases of LBW in the stunting toddler group in the working area of the Situraja Health Center were caused by pregnant women with KEK (Chronic Energy Deficiency) and premature babies.The nutritional condition of mother before and during pregnancy can affect the nutritional status of mother. Mothers who had a history of chronic energy deficiency during pregnancy can inhibited the growth process of the fetus, so she is at risk of giving birth to babies with low birth weight and at risk of having stunting children. In addition, premature babies have a greater risk of becoming stunted compared to babies born at term. They are not only smaller than normal babies, but can also have a variety of physical and developmental problems, usually related to the function of immature organs, including the lungs, brain and heart. They also have a risk of being susceptible to infection, this repeated infection can increase the risk for stunting.

4. CONCLUSION

Based on the results of research conducted regarding the relationship between antenatal care visits (ANC) and low birth weight (LBW) on the incidence of stunting in toddlers aged 24-59 months in the working area of the Situraja Health Center, Sumedang Regency in 2022, it can be concluded as follows:

1. The incidence of stunting in toddlers aged 24-59 months based on gender and age range of toddlers showed that the majority of stunting occured in female toddlers as many as 52 people (55.95%) and is dominated by toddlers with an age range of 3-4 years as many as 45 people (48.4%).
2. Toddlers with mother who had a history of non-standardized ANC visits (52.7%) were found in the case group (stunted) compared to toddlers in the control group (not stunted) (18.3%).
3. Most of toddlers with history of low birth weight (51.6%) were found in the case group, while in the control group only (17.2%).
4. There is a significant relationship between antenatal care (ANC) visits and low birth weight (LBW) with the incidence of stunting in toddlers 24-59 months in the working area of the Situraja Health Center, Sumedang Regency in 2022 with a p-value of 0.000 each (<0.05)..

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