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The Relationship Of LBW History And Immunization Provision With The Incidence Of Stunting In Toddlers

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ABSTRACT
Stunting is a condition that causes physical and mental health problems in children. In Indonesia, the prevalence of stunting reached 22.3%, with a target of reducing it to 14% by 2024. Factors that cause stunting include obesity, malnutrition, and poor nutrition. The purpose of this study was to identify the relationship between the history of Low Birth Weight (LBW) and immunization provisions with the incidence of stunting in toddlers aged 2-3 years in the Pantoloan Health Center working area. This study used a case control design with a backward looking approach. The population in the study were toddlers aged 24-36 months with a sample of 37 case groups and 37 control groups. *Of the 74 respondents, it was found that 37 respondents in the case and control groups, 35 respondents each with a history of LBW and 2 respondents who did not have a history of LBW.*Of the 37 respondents who experienced stunting, 22 of them were given complete basic immunization and 15 respondents did not get complete immunization. There is no significant relationship between LBW history and the incidence of stunting in children aged 2-3 years in the Pantoloan Health Center Working Area. However, there is a significant relationship between the history of complete basic immunization and the incidence of stunting in children aged 2-3 years in the Pantoloan Health Center Working Area.

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INTRODUCTION

Toddlers with short bodies that are not appropriate for their age or what is called stunting is a process of stunted growth in the toddler age group. The problem of stunting can occur from various factors, one of which is long-term malnutrition due to inadequate food consumption according to the nutritional needs of children under five (Rahmadhita, 2020). A toddler is said to be stunted if his length or height measurement does not match his age (PB/U or TB/U) with a Z-Score <-2 SD (Regulation of the Minister of Health of the Republic of Indonesia, 2020).

Based on data from the World Health Organization (WHO) in 2022, the world prevalence of stunting is 22.3% (WHO, 2022). Stunting in Indonesia from 2022 to 2023 will decrease by 0.15% (SSGI, 2022; SKI, 2023). However, these results prove that the stunting problem in Indonesia is still high compared to the estimated target figure for reducing stunting

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in 2024, which is 14% according to Presidential Regulation of the Republic of Indonesia No. 72 Concerning the Acceleration of Reducing Stunting in 2024.

Stunting data in Central Sulawesi in 2023 is 27.2%. Efforts are being made to address the high stunting rate in Central Sulawesi. Palu City has a number of stunting cases of 22.1% (Indonesian Ministry of Health, 2023). The prevalence of stunting in the Pantoloan Community Health Center working area in 2023 was recorded at 17.712% or 209 children under five were stunted (Palu City Health Service Data, 2023).

Stunting in toddlers has an impact on decreasing intellectual abilities, impaired motor skills and productivity, and has the potential to increase the risk of non-communicable (degenerative) diseases in the future. Children with stunting have the possibility of becoming obese because their weight does not match their height. The increase in a child's body mass causes an increase in nutritional status beyond the normal limits that have been set so that if the child has a short body (stunting) it makes the child more susceptible to obesity (Alba et al., 2021).

Stunting problems can occur through indirect causes and direct causes. Exclusive breastfeeding and colostrum, consumption behavior, infectious diseases, and low birth weight are direct causes of stunting. Indirect factors start from food availability, history of health checks (immunization), cleanliness and environmental cleanliness (Ruswati et al., 2021).

One of the factors in the occurrence of stunting is low birth weight (LBW) in babies. The problem of LBW that occurs is a picture of malnutrition when women are pregnant for a long period of time (Alba et al., 2021). Birth weight in general is closely related to long-term growth and development. So, the further impact of LBW can be growth faltering. A baby born with LBW will find it difficult to catch up with their initial growth. Growth that lags behind normal will cause the child to become stunted (Murti et al., 2020).

Based on research by Oktavianisya et al (2021), it is stated that LBW has an influence on the incidence of stunting. Children with LBW conditions have a 2.1 times higher chance of stunting compared to children without a history of LBW (Oktavianisya et al., 2021). This statement is also in accordance with research by Khasanah (2022) where the majority of babies experiencing stunting occurred in the 20% group of LBW babies compared to 10% of normal babies (Khasanah, 2022).

Immunization is also an indirect factor in the occurrence of stunting. If a child is not fully immunized, it can weaken the child's immune system and make him very susceptible to infection. Immunization is an effort to strengthen and increase your baby's immunity against disease through injections. In addition, providing complete immunization to children in the first stage can affect their growth and development. Basic immunization is very important to protect children from infectious diseases which cause growth and development failure in children (Vasera and Kurniawan, 2023).

Previous research by Nursyamsiah et al (2021) showed that children with a history of incomplete immunization showed a higher rate of stunting when compared to children who had a history of complete immunization. Apart from that, the research results also show a relationship between immunization history and the frequency of stunting in children under 5

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years. Children who are not given basic and complete immunization are 3.5 times more likely to experience stunting (Nursyamsiah et al., 2021).

Observation results show that data on the incidence of LBW at the Pantoloan Community Health Center has a presentation of between 18.7% or as many as 178 cases out of 951 children in 2023. In addition, data regarding complete basic immunization at the Pantoloan Community Health Center averages around 15.3% of children or around 146 of the 951 children who received complete basic immunization throughout 2023. This is a problem that must be considered and addressed immediately. Based on the problems that have been explained, researchers are interested in conducting research on the relationship between a history of LBW and immunization with the incidence of stunting in toddlers aged 2-3 years.

METHOD

This research was carried out using a case control research design where the research will be carried out by comparing two groups, namely controls and cases by trying to look backwards. This research will be conducted in the Pantoloan Community Health Center Work Area, Palu City, Central Sulawesi. The research was carried out in July 2024. The population in this study was all toddlers aged 2-3 years in the Pantoloan Community Health Center working area in August 2023 totaling 209 children. The research sample was calculated using the Slovin formula. The total sample was 74 toddlers. The ratio of case and control groups was 1:1. This research case group consisted of 37 children who were known to be stunted. The control group consisted of 37 children who were not known to be stunted. The research instruments used were through observation and interviews, namely report books for cadres or posyandu officers, KIA books and research questionnaires. Data collection techniques consist of two types, namely primary data and secondary data. Primary data, namely data obtained directly from the research sample, includes stunting variables obtained by looking at the length/height of toddlers using a report book tool for posyandu cadres/officers, birth weight history variables obtained by looking at the KIA book or asking the toddler's mother directly, variables The immunization history of toddlers was obtained by looking at the immunization records in the KIA book. Secondary data in research is research supporting data. Secondary data was obtained from the Palu City Health Service, namely the prevalence of stunting at the Pantoloan Community Health Center working area level with indicators of height according to age (TB/U), data on the number of children under five was obtained from the community health center, the incidence of LBW was obtained by looking at the child's birth weight in the KIA book and The history of immunization was obtained by looking at the KIA book.

RESULTS

Respondents in this study were children under five who had a history of LBW and complete immunization. The following are the characteristics of respondents in the research which can be seen in Table 1.

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Table 1. Distribution of Characteristics of Respondents Based on Gender, Stunting Incident, History of LBW, Immunization at Pantoloan Community Health Center (f=74)[a]

Characteristics	Frequency(*f*)	Percentage(%)
Gender		
Man	45	60.8
Woman	29	39.2
Stunting events		
Stunting	37	50
Not Stunting	37	50
History of LBW		
LBW	70	94.6
Not LBW	4	5.4
Providing Immunization		
Complete	31	41.9
Incomplete	43	58.1

[a]Overall sample total. Source: Primary Data (2024)

Based on Table 1 above, it is known that the frequency distribution of respondents' characteristics is based on gender, with the majority of respondents being male, 45 people (60.8%) and 29 people female (39.2%). Respondents with stunting and non-stunting were 37 people (50%) respectively according to the class division of cases and controls. Then, there were 70 respondents with a history of LBW (94.6%) and no history of LBW as many as 4 people (5.4%) while there were 31 respondents with complete immunization (41.9%) and 43 people with incomplete immunization. (58.1%).

Table 2. Analysis of the Relationship between LBW History and Stunting Incidence in Toddlers aged 2 – 3 years in the Pantoloan Community Health Center Working Area (f=74)[a]

History of LBW b	Stunting events				Total		*P Value*
	Stunting		Not Stunting				
	f[c]	%d	*F*	%	*f*	%	
LBW	35	94.6	35	94.6	70	94.6	
Not LBW	2	5.4	2	5.4	4	5.4	1,000e
Total	37	100	37	100	74	100	

[a]Overall sample total. [b]History of LBW. [c]f=F=frequency. [d]%=percentage. [e]Chi-square test, significantN BIL p<0.1. Source: Primary Data (2024).

Table 2 shows that the number of stunting and non-stunting respondents was 37 people each with a history of LBW incidents in each group of 35 people (94.6%) and respondents with a history of not being LBW in each group were 2 people (5.4 %).

Table 3. Analysis of the Relationship between Immunization and Stunting Incidents in Toddlers Aged 2-3 Years in the Pantoloan Community Health Center Working Area (f= 74)a

Providing Immunization b	Stunting events				Total		*P Value*
	Stunting		Not Stunting				
	f[c]	%d	*f*	%	*f*	%	
Complete	22	59.5	9	24.3	31	41.9	0.004e
Incomplete	15	40.5	28	75.7	43	58.1	

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Providing Immunization b	Stunting events				Total		*P Value*
	Stunting		Not Stunting				
	f[c]	%d	*f*	%	*f*	%	
Total	37	100	37	100	74	100	

[a]Overall sample total. [b]Provision of Immunization. [c]f=frequency. [d]%=percentage. [e]Chi-square test, significant if p<0.1. Source: Primary Data (2024)

It can be seen in the table above that the number of stunted and non-stunting respondents was 37 people each with a complete basic immunization history in the stunting group of 22 people (59.5%) and an incomplete basic immunization history of 15 people (40.5%). In addition, in the non-stunted group, there were 9 respondents with a history of complete basic immunization (24.3%) and a history of incomplete basic immunization as many as 28 people (75.7%).

Discussion

Based on research conducted in the Pantoloan Community Health Center working area, 35 children experienced stunting and 2 children did not experience a history of LBW, while of the 37 children who did not experience stunting, 35 children experienced a history of LBW and 2 children who do not experience LBW. After carrying out a statistical test, it was found that the p value was > 0.1, so H0 was rejected, this shows that there is no significant relationship between the history of LBW and the incidence of stunting in the Pantoloan Community Health Center working area. Many factors can cause the incidence of stunting to increase in an area, factors that are closely related to stunting are infectious diseases and inadequate levels of macronutrients and micronutrients. Toddlers who have a history of LBW only have an effect on growth in height for the first 6 months. If nutritional intake during that period is given optimally then there will be a small risk of experiencing it so that toddlers who have a history of low birth weight cannot be used as a reference for toddlers who will experience stunting later (Suyami et al. al., 2023).

The results obtained in this study are not in line with the Indonesian Ministry of Health (2020) which explains that there is a real relationship between LBW history and the incidence of stunting. The cause of this is due to several factors, such as the mother's level of knowledge and attitude in providing treatment to her child who is LBW so as to reduce the possibility of stunting in children. This statement is in line with research by Mukhlis and Marini (2020) which states that babies with a history of LBW but not experiencing stunting are because when the mother gives birth and finds out that her baby is LBW, she will receive counseling from the nearest health worker to give the baby exclusive breast milk followed by giving MPASI. which is good so that the baby's growth is good and does not experience stunting. These various efforts can save their children so that they will not experience stunting even if they are born with a history of LBW (Alba et al., 2021).

The OR value of this study shows a value of 1, meaning that a history of LBW does not pose a risk for stunting in children. Research conducted by Febriyaeni et al., (2023) regarding the effect of LBW on the incidence of stunting carried out in the working area of the Kresana Community Health Center, Brebes sub-district, obtained an OR value of 5, which means that

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a history of LBW is 5 times more likely to experience stunting compared to children without a history of LBW.

Toddlers who experience LBW, if not treated properly and quickly, will be at risk of developing cerebral palsy, which is a motor development disorder related to the ability to walk. The importance of fulfilling nutrients during pregnancy is very important to avoid nutritional deficiencies in prospective mothers which will affect the fetus, for this reason it is necessary to understand in the canteen (prospective bride and groom) regarding the importance of fulfilling nutrition during pregnancy (Rosita et al., 2020).

Babies with a history of LBW are one indicator to describe the inadequate nutritional intake of pregnant women in the long term (Sukmawati et al., 2023). Pregnant women who have nutritional problems such as Chronic Energy Deficiency (CED) and anemia can disrupt the nutritional needs of the fetus, resulting in decreased fetal body tissue formation. Long-term use of nutritional reserves can have a real influence on growth and development disorders in the fetus. The baby's birth weight and length are a real reflection of growth delays during the fetal period (Ministry of Health of the Republic of Indonesia, 2023).

Based on research that has been conducted, of the 37 children who are stunted, there are 22 children who have a complete basic immunization history and 15 children who have an incomplete immunization history, while in the category of children who do not experience stunting there are 9 children who have a complete basic immunization history and 28 children who had an incomplete immunization history. After carrying out statistical tests, it was found that the significance value was <0.1, thus H0 was accepted, indicating that there was a significant relationship between complete basic immunization history and the incidence of stunting in the Pantoloan Community Health Center Working Area. Immunization is very important for increasing a child's immunity against a disease. Toddlers with incomplete basic immunization status have a very large chance of experiencing stunting when compared to toddlers with complete basic immunization status (Mianna and Harianti, 2020).

Similar research was conducted by Afriansyah and Fitriyani (2023) which stated that there was a real relationship between a history of complete basic immunization and the incidence of stunting in toddlers aged over 5 years in Depok City in 2023. Then, other research by Arsyad et al. (2023) stated that there is a relationship between basic immunization history and the incidence of stunting.

The OR value in this study shows that a history of incomplete basic immunization has a 4.563 greater risk of experiencing stunting compared to children with a history of complete basic immunization. Research conducted by Khoiriyah (2021) regarding the history of immunization status and the incidence of stunting in Bantargadung Village, Sukabumi Regency in 2019, the OR value obtained was 0.7, which means incomplete basic immunization has a 4,563 greater risk of experiencing stunting compared to children with a complete history of basic immunization.

Immunization is an effort to increase a person's immunity against a disease so that if someone later experiences the disease, they will experience mild or not severe pain (Rayhana & Amalia, 2020). Providing immunization is also a program to reduce morbidity and mortality rates in children due to various diseases. If a child's immunization is incomplete, the child is

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more susceptible to disease and in the long term this causes stunted growth in the child, resulting in stunting (UNICEF, 2023).

Basic immunization status is a factor that influences the incidence of stunting with a three times greater risk of experiencing stunting. Toddlers who do not have immunity to disease will quickly lose body energy due to infectious diseases. The reaction is a decrease in the child's appetite so that the child will refuse to eat. . Refusal to eat means reduced intake of nutrients in the child's body. Children will be at risk of stunting if their nutritional intake is inadequate and they experience recurrent infections. Repeated infections in children can affect their growth and development so that children will be susceptible to disease. Disease provides negative feedback on nutritional status and if it occurs over a long period of time can increase the risk of stunting (Wanda et al., 2021).

CONCLUSION

The conclusion in this study is that the characteristics of the respondents were that most of the respondents were male, 45 people (60.8%) and 29 people (39.2%) female. Respondents with stunting and non-stunting were 37 people (50%) respectively according to the class division of cases and controls. Then, respondents with a history of LBW were 70 people (94.6%) and no history of LBW as many as (5.4%) while respondents with complete immunization were 31 people (41.9%) and incomplete immunization were 43 people (58 .1%). There is no significant relationship between a history of LBW and the incidence of stunting in children aged 2-3 years in the Pantoloan Community Health Center Working Area with a significance value of >0.1. There is a significant relationship between a history of complete basic immunization and the incidence of stunting in children aged 2-3 years in the Pantoloan Community Health Center Working Area with a significance value of <0.1.

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