IRDH International Journal of Technology, Agriculture & Natural Sciences
https://irdhjournals.com/ijtans
Vol. 03, No. 01 (2026) : March. E-ISSN : 3032-2286

Exclusive Breastfeeding and Low Birth Weight Factors on the Incidence of Stunting in Toddlers at the Posyandu in the Penkase Oeleta Health Center Area

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INDEXING
Keywords:
Keyword 1; Exclusive Breastfeeding
Keyword 2; Low Birth Weight (LBW)
Keyword 3; Stunting
Keyword 4; Toddler
Keyword 5; Posyandu

ABSTRACT
Stunting is a chronic nutritional problem in toddlers that affects a child's growth and development. This study aims to analyze the relationship between exclusive breastfeeding and low birth weight (LBW) with the incidence of stunting in toddlers aged 24–60 months at the Integrated Health Post (Posyandu) in the Penkase Oeleta Health Center area. This study used an analytical design with a cross-sectional approach. The sample consisted of 30 toddlers selected using accidental sampling techniques. Data were collected through interviews with the toddlers' mothers and measurements of the toddlers' height, and then analyzed using the Chi-Square test. The results of the study showed a significant relationship between exclusive breastfeeding and the incidence of stunting (p=0.02), as well as between LBW and the incidence of stunting (p=0.00). Toddlers who do not receive exclusive breastfeeding and have a history of low birth weight tend to be at a higher risk of stunting compared to toddlers who receive exclusive breastfeeding and are born with normal birth weight. This study concludes that exclusive breastfeeding and low birth weight are factors associated with the occurrence of stunting in toddlers aged 24–60 months at the Posyandu under the Penkase Oeleta Health Center, thus requiring promotive and preventive efforts through nutrition education and continuous monitoring of maternal and child health.

Article History
Received : 15 January 2026; Revised : 03 February 2026; Accepted : 04 February 2026
Publish : 10 February 2026

INTRODUCTION

Stunting is when a young child's growth doesn't develop properly because they aren't getting enough nutrition over a long period, especially during the first 1,000 days of their life (Kemenkes, 2023). Children who have stunting are shorter than what is expected for their age. The World Health Organization says this condition is determined by a height or length that is more than two standard deviations below the average growth measurements for children, as stated in Rusliani et al., 2022. In 2022, nearly 22.3% of children under 5 years old around the world were too short for their age, which means about 148.1 million kids were stunted. According to WHO, if the stunting rate is more than 20%, it is seen as a long-term problem that needs to be addressed (Tendean et al., 2022).

Stunting is one of the three burdens of nutritional problems (triple burden of malnutrition) in Indonesia. Therefore, stunting can cause serious issues because it has both short-term and long-term impacts that can be detrimental to children (individuals),

parents, society, and the country. In the short term, stunting has negative effects such as increasing morbidity and mortality rates in toddlers; hindering cognitive, motor, and verbal development in toddlers; and raising healthcare costs because stunted toddlers are more susceptible to infectious diseases. In the long term, stunting can lead to suboptimal body stature in adulthood; increase the risk of degenerative diseases, such as diabetes and obesity; reduce reproductive health; hinder learning capacity; and lower productivity. Furthermore, stunting also has the potential to cause losses of around 23% to the country each year (Safitri et al., 2023).

According to the 2024 Indonesian Health Survey (SKI), the national prevalence of stunting is 19.8% (Kemenkes, 2024). Based on the 2023 SKI results, the prevalence of stunting in NTT Province is 37%. According to data from the Community-Based Nutrition Recording and Reporting Electronic Application (e-PPGM) for the period of June 2024, the stunting rate in Kupang City reached 18.8%. e-PPGM data for Kupang City shows that as of August 2023, the nutritional status of toddlers in the Posyandu areas of the Penkase Oeleta Health Center reached 8.3%, with a total of 66 toddlers.

Birth weight shows how well a baby grew before being born and gives an idea of how much nutrition the baby got while in the mother's womb, which can affect how the child grows and develops as they get older. Low birth weight is when a baby is born weighing less than 2,500 grams, no matter how long the baby was in the mother's womb. About 20% of all cases of stunting are due to low birth weight babies. Babies who are born with low birth weight have already had slow growth inside the womb, and this slow growth continues after they are born. They grow and develop more slowly compared to babies who are born at a normal weight, and they often don't reach the growth level they should be at by the time they are older. Growth problems that happen are connected to how the brain develops. Before 20 weeks of being in the womb, the brain's growth can be stopped, which causes changes in all the cells in the body.

Babies born with low birth weight (LBW) can experience digestive tract disorders because it is not fully functional, resulting in poor food absorption and electrolyte disturbances. LBW babies also face challenges with breastfeeding due to their small body size, weakness, and small stomachs, making it difficult to suck properly. Consequently, discovered that the baby's growth could be affected, and if this problem persists without proper nutrition, such as without breastfeeding, the child is more likely to become unwell and may even experience stunting (Trisiswati et al., 2021). According to previous research conducted by (Chandra & One, 2021), there is a relationship between LBW and the occurrence of stunting in children aged 1-5 years, with children born with LBW having a 5 to 6 times higher risk of stunting compared to children born with normal birth weight.

Several studies have looked at how exclusive breastfeeding relates to the occurrence of stunting. A study done by Sampe and others in 2020 in Mamasa Regency showed that there is a link between exclusive breastfeeding and stunting in children. The study found that kids who weren't breastfed exclusively were 61 times more likely to be stunted. Handayani and her team in 2019 did a study in Gunung Kidul Regency and discovered that exclusive breastfeeding has an impact on whether toddlers develop stunting. Fitri (2018) did a study in Pekanbaru and discovered that exclusive breastfeeding is connected to the occurrence of stunting.

Because of the problems that have come up, the researcher wants to look at how exclusive breastfeeding and low birth weight affect the chances of toddlers being stunted, specifically at the Posyandu center under the Penkase Oeleta Health Center. The researcher also wants to find out how common stunting is in toddlers and what percentage of babies are exclusively breastfed and have low birth weight at the Posyandu under the

Penkase Oeleta Health Center. So, this research is expected to help the government and other researchers make better policies about exclusive breastfeeding and taking care of low birth weight babies in Kupang City, East Nusa Tenggara.

LITERATURE REVIEW

1. Stunting and risk factors

Stunting happens when a child doesn't get enough nutrients over a long time, which makes them shorter than other kids their age. WHO says that nearly 149.2 million children under five years old around the world have stunting. Asia has a high rate of 21.8% in this problem. Southeast Asia is second in Asia after South Asia when it comes to the percentage of people affected, with 27.4% being the rate reported. Stunting happens when a child doesn't get enough nutrients over a long time, which makes them shorter than other kids their age. The main reasons for stunting are a past of low birth weight and being breastfed exclusively. Stunting is when a child's body and brain don't grow properly because they don't get enough nutrition over a long time. Stunting in young children needs careful attention because it can lead to lower intelligence, less ability to work or perform well, and a higher chance of developing serious health problems later in life. Short toddlers may face a higher chance of having lower intelligence, being less productive, and developing certain serious health problems later in life. Three main reasons lead to stunting, which are starting to feed solid foods too early, having a past of being sick, and being born with a low birth weight (LWB).

To properly address stunting, it's important to understand what causes it and which factors increase the risk. The things that lead to stunting are birth weight, breastfeeding only, illnesses, a family's money situation, how much a mother knows about food, and her education. All these factors are connected to each other, like how much food a child gets, how much they weighed at birth, and if they get sick (Sukiman et al., 2022). In addition, stunting can lead to both short-term and long-term problems. The short-term effects include problems with brain development, lower intelligence, issues with physical growth, and changes in how the body handles metabolism. Meanwhile, there can be long-term bad effects like lower thinking skills and worse school performance, weaker immunity leading to more sickness, and a greater chance of getting diabetes, being overweight, heart and blood vessel problems, cancer, strokes, and disabilities as you get older (Rahayu et al., 2018).

2. The Relationship Between Exclusive Breastfeeding and Stunting

Determinant factors for the occurrence of stunted children include energy and protein intake. Children's energy needs can come from breast milk. Breast milk is an important food for children. Children aged 0-6 months require exclusive breastfeeding because breast milk is the best food for them. Nationally, the coverage of infants receiving exclusive breastfeeding in 2019 was 67.74%, a decrease compared to 2018, which was 68.74%.

Giving extra foods along with breast milk, and how well mothers can feed only with breast milk during the first 6 months, is linked to how often children end up being too short for their age. Breast milk gives babies good nutrition and has antibodies that help their bodies fight off illnesses, making them less likely to get sick. Sahdani and their team studied 141 young children between the ages of 24 and 60 months in Surabaya City and found that exclusive breastfeeding is linked to a higher chance of stunting. A study on Mandangin Island in Sumenep Regency, which included 90 children between the ages of 2 and 5, found that children who did not receive exclusive breastfeeding were 3.7 times more likely to suffer from stunting than those who were given exclusive breastfeeding.

3. The Relationship between LBW and Stunting

According to the UNICEF framework, three main reasons lead to stunting: starting complementary foods too early while still breastfeeding, having a low birth weight, and a past history of illness. LBW is linked to higher chances of health problems in babies before and after birth, including issues with growth, brain development, and long-term health conditions. A study in sub-Saharan Africa that included 110,497 children under five years old found that children who were born with low birth weight were more likely to develop stunting. A study in the working area of Mangasa Community Health Center that included 60 toddlers found that children who had a history of being born with low birth weight were 5.7 times more likely to have stunting. Besides breastfeeding on its own, how long a baby is breastfed and if they were born with a low birth weight can also increase the chances of stunting. In Indonesia, many babies who are still very young have a low birth weight, which means they weigh 2500 grams or less, and this happens to about 6.2% of them. In the NTT province, this rate is a little higher, at 8.2%.

RESEARCH METHOD

This study used an analytical research design and looked at things at one point in time. The research took place at the Posyandu located in the Penkase Oeleta Health Center region during the months of November and December in 2025. The study included every toddler between the ages of 24 and 60 months who visited the Posyandu at the Penkase Oeleta Health Center during the time the study was happening. The study included 30 toddlers, and they were chosen through accidental sampling methods. In this study, the factors being looked at were exclusive breastfeeding and low birth weight, and the outcome being measured was how often stunting occurred. Data were collected by asking the toddlers' mothers questions using a form and by measuring the toddlers' height with standard tools. Stunting status was decided by looking at the height compared to the expected age. The data was analyzed both on its own and in pairs using the Chi-Square test, and the results were considered significant if they met the 95% confidence level, which means the chance of a mistake was less than 5% ($\alpha = 0.05$).

RESULT AND DISCUSSION

Table 1. Distribution of Characteristics of Toddler Respondents at the Posyandu in the Puskesmas Penkase Oeleta Area

Characteristics	Frequency (n)	Percentage (%)
Exclusive Breastfeeding		
Yes	14	46,7
No	16	53,3
Low Birth Weight		
Normal	18	60,0
LBW	12	40,0
Stunting Status		
Stunting	13	43,3
No Stunting	17	56,7

Source: Primary Data

Table 1. Shows that the respondents did not receive exclusive breastfeeding (53.3%), respondents with low birth weight (40.0%), and respondents who experienced

stunting (43.3%)

Table 2. The Relationship Between Exclusive Breastfeeding History and the Incidence of Stunting

Exclusive breastfeeding	Stunting (%)	No Stunting (%)	Total	p Value
Yes	3 (21,4)	11 (78,6)	14	0,021
No	10 (62,5)	6 (37,5)	16	
Total	**13**	**17**	**30**	

Source : Chi Square test

Table 2. Shows that respondents who did not receive exclusive breastfeeding experienced stunting (62.5%) with a p-value of 0.021

Table 3. The Relationship Between History of Low Birth Weight and Incidence of Stunting

Low Birth Weight	Stunting (%)	No Stunting (%)	Total	p Value
Normal	3 (16,7)	15 (83,3)	14	0,008
LBW	10 (83,3)	2 (16,7)	16	
Total	**13**	**17**	**30**	

Source : Chi Square test

Table 3. Shows that respondents with low birth weight who experienced stunting (83.3%) and a p-value = 0.008.

This study shows that babies who were breastfed exclusively are more likely to experience stunting. Exclusive breastfeeding is very important for helping babies get the nutrients they need, strengthening their immune system, and supporting healthy growth during their first years of life. Infants who are not breastfed exclusively are more likely to get sick and not get enough nutrition, which can slow their growth and make them more likely to be short for their age. These results match what earlier research has shown, which is that breastfeeding exclusively helps protect young children from stunting.

According to a study by Putri and Ayudia in 2020, there is a strong connection between exclusive breastfeeding and the risk of stunting in children between 6 months and 5 years old. The study found that children who are not breastfed exclusively are 38.89 times more likely to experience stunting compared to those who are exclusively breastfed. A study by Purnamasari and Rahmawati in 2021 found that there is a strong connection between exclusive breastfeeding and stunting in toddlers. The research showed that toddlers who do not get exclusive breastfeeding are 61 times more likely to develop stunting compared to those who are exclusively breastfed.

This study also found a significant relationship between low birth weight (LBW) and the incidence of stunting. LBW reflects the nutritional and health status of the mother during pregnancy. Babies born with low birth weight have limited nutrient reserves and are more vulnerable to growth disorders. This condition can continue into toddlerhood if not accompanied by optimal nutrition intake and healthcare, thereby increasing the risk of stunting. These results are in line with theories and previous studies that state LBW is one of the main determinants of stunting.

The research conducted by Angriani et al. (2019) concerning the relationship between the duration of breastfeeding and birth weight with the incidence of stunting in

toddlers at Siulak Mukai Health Center, Kerinci Regency, showed that most had normal nutritional status (height-for-age) at 63.5%, breastfeeding duration of ≥2 years at 67.6%, and birth weight ≥2500 grams at 66.2%. Chi-square analysis results indicated a significant relationship between the duration of breastfeeding and stunting incidence, as well as birth weight and stunting incidence. Another study conducted by Rahayu et al. (2015) on birth weight history and stunting incidence in children under two years old in the Sungai Karias Health Center area, Hulu Sungai Utara, indicated that children with low birth weight had a 5.87 times higher risk of experiencing stunting.

Research results at Baitussalam Health Center also showed a significant relationship between low birth weight (LBW) and the occurrence of stunting in toddlers ($p = 0.012$), confirming that LBW is one of the important determinants of stunting in toddlers. Another case study in Pesawaran also found that toddlers with a history of LBW have a much higher risk of stunting compared to babies with normal weight (OR=17.06).

Based on these research results, it can be concluded that providing exclusive breastfeeding and preventing LBW through monitoring the health of pregnant women are important efforts in reducing the incidence of stunting. The role of health workers and posyandu (integrated health post) cadres is essential in educating mothers about the importance of exclusive breastfeeding and routinely monitoring the growth and development of children.

CONCLUSION

A study done at the Posyandu in the Penkase Oeleta Health Center area with 30 young children between 24 and 60 months old shows that there is a strong link between exclusive breastfeeding and stunting, as shown by a p-value of 0.021. Toddlers who weren't breastfed exclusively are more likely to have stunting than those who were. In addition, there is a strong connection between a history of low birth weight and the occurrence of stunting, with a p-value of 0.008. Toddlers who were born with a low birth weight are more likely to have stunting than those who were born with a typical birth weight. So, exclusive breastfeeding and the baby's birth weight are things that can influence whether a toddler between 24 and 60 months ends up with stunting, as seen in the Posyandu center at the Penkase Oeleta Health Center.

ACKNOWLEDGMENT

The author would like to express gratitude to all parties who have contributed to the implementation of this research. Thanks are extended to the managers and cadres of the Posyandu in the Penkase Oeleta Health Center area for their permission, assistance, and cooperation during the data collection process. Thanks are also conveyed to the mothers and toddlers who were willing to be respondents in this study. Furthermore, the author appreciates the support from relevant institutions as well as all parties who have provided input and support, allowing this research to be completed successfully.

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