

Exclusive Breastfeeding History with The Incidence of Stunting in Children Aged 6-24 Months

Sumarah[✉], Munica Rita Hernayanti

Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Yogyakarta, Indonesia

[✉]Corresponding author: sumarahakbid@gmail.com



ARTICLE INFO

Article History:

Received: 2024-09-14

Accepted: 2025-03-12

Published: 2025-09-30

Keywords:

Stunting; Exclusive breastfeeding; Children aged 6-24 months

ABSTRACT

Background: Stunting is nutritional health issues in Indonesia affecting children under 5 years. Numerous variables, including exclusive breastfeeding, can contribute to stunting. This study aims to find out the influence of history of exclusive breastfeeding to stunting in children between the ages of 6 and 24 months in the Turi Health Center working area. **Methods:** This study used a case-control study design and an observational-analytic sampling with a simple random sampling method. All children aged 6-24 months in Turi Health Center's toddler registration who met the inclusion and exclusion criteria were listed as study subjects. There were 100 subjects with 50 subjects being cases and 50 subjects being controls. Data analysis used univariable, bivariable using Chi-square, and multivariable using logistic regression. **Results:** The characteristics of respondents with male and female gender had the same proportion (50%), while the children age were mostly 13-24 months old (62%). Most of respondents had a history of exclusive breastfeeding (80%) dan had never experiencing infectious diseases (58%). The findings demonstrated a significant correlation between exclusive breastfeeding history and stunting among children aged 6-24 months with a p-value of 0.012 OR 3.857 (95% CI:1.278-11.638). **Conclusion:** Exclusive breastfeeding is one of the keys to provide sufficient nutrients among children under five. Exclusive breastfeeding continues to be promoted to decrease the prevalence of stunting in children aged 6-24 months.or exploring other variables that influence labor progress.



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INTRODUCTION

Chronic undernutrition known as stunting is characterized by growth failure that builds up both before and after birth and is brought on by long periods of poor nutritional intake from feeding that does not meet nutritional needs. Stunting in children under 5 years can have both short and long-term effects, including raising the risk of morbidity and mortality and impeding the motor and mental development of children. Children under 5 years who are stunted have a decreased capacity for thought and are less productive. They also have an increased chance of getting degenerative disorders in later life (Kementerian Kesehatan Republik Indonesia, 2024).

According to the United Nations Children's Fund (UNICEF), 149 million children under 5 years were estimated to be stunted worldwide in 2022. Nearly half of deaths among them are linked to undernutrition. These mostly occur in low- and

middle-income countries. By the year 2022, 1 in 5 children under the age of 5 were stunted in Indonesia (United Nations Children's Fund, 2022). Statistical data from the Basic Health Research (*Riskesdas*) show that the national prevalence of stunting climbed from 35.6% in 2010 to 37.2% in 2013. On the other hand, the prevalence of stunting continues to decline between 2018, 2021, and 2022 with percentages of 30.8%, 24.4%, and 21.6%, respectively. Nevertheless, improvement is still needed to reach the 14% targeted for 2024 (Kementerian Kesehatan Republik Indonesia, 2018, 2022).

The findings from the Indonesian National Status Survey (SSGI) 2022, the Special Region of Yogyakarta (DIY) continues to face children under 5 years nutrition issues, and the incidence of stunting is 16.4% (Kementerian Kesehatan Republik Indonesia, 2022). The prevalence of stunted children 0-59 months in Sleman Regency in 2022 was recorded at 15%. There were 5 districts were priority targets for handling stunting, Minggir with stunting cases reaching 13.16%, Turi with as much as 12.75%, Ngemplak I with as much as 12.63%, Pakem with as much as 11.80%, and Moyudan with as much as 9.91 (Dinas Kesehatan D.I. Yogyakarta, 2023; Dinas Kesehatan Kabupaten Sleman, 2020).

Key factors contributing to stunting are inadequate diet and feeding practices, and limited access to services. In Indonesia, 3 in 10 infants under the age of 6 months are not exclusively breastfed. Meanwhile, 2 in 5 children under the age of five years do not receive the minimum acceptable diet needed for optimal growth and development (United Nations Children's Fund, 2022). Exclusive breastfeeding is the simplest method of providing sufficient nutrients to children and can be used as a preventive measure against stunting (Hizriyani, 2021). In addition, there are several ways to prevent stunting, including providing children with a healthy diet, practicing and teaching children to be hygienic, encouraging physical activity, and keeping an eye on children's development (Efendi et al., 2021).

Previous studies revealed that factors influencing stunting were parents' working status, exclusive breastfeeding, and recurrent diarrhea. Maternal education is also related to stunting among children under 5 years. Children of parents with low levels of education are more likely to be stunted. High-level education may increase the knowledge level. Parents who have received education will be able to maintain their children's diet and hygiene (Danso & Afranie, 2023; E. R. Dewi, Ulfa, & Budiati, 2023).

The exclusive breastfeeding program is an approach to solving the nutritional problem of children under 5 years. Breast milk is the gold standart for infant nutrition and growth. Children who are breastfed longer tend to grow faster in their second and third years. Breastfeeding contributes to both the nutritional and health status of infants. Breast milk contains nutrients and immunity agents that can protect infants from infectious diseases, especially in the first six months (Scientific Advisory Committee on Nutrition, 2018). A literature review found that some studies in several countries, especially in Indonesia, Ghana, and Ethiopia, stated that breastfeeding has a relationship with stunting and breastmilk can prevent stunting. Exclusive breastfeeding strengthens the immune system, making infants less susceptible to infectious diseases (Rhisma Nasita Sianti, Kartasurya, & Kartini, 2024). This study aims to find out the influence of history of exclusive breastfeeding to stunting in children aged 6-24 months in the Turi Health Center working area.

METHODS

This study was a case-control study and an observational-analytic sampling with a simple random sampling method. All children aged 6-24 months in Turi Health Center's toddler registration who met the inclusion and exclusion criteria were listed as study subjects. There were 100 subjects with 50 stunted toddlers being cases and 50 non-stunted toddlers being controls. The inclusion criteria were birth length ≥ 48 cm, the youngest child, maternal height ≥ 145 cm, and willingness to be a study subject by first signing an informed consent. The exclusion criteria were birth length ≤ 48 cm, premature or LBW infant, and children who have congenital or physical disabilities.

From October 11 to November 6, 2023, data were collected by visiting the Integrated Service Station (*Posyandu*) in the Turi Health Center working area. Data collection was done using a questionnaire on respondent identification, parental identification, child anthropometry, exclusive breastfeeding history, and history of infectious diseases. Data collection was conducted by skilled and trained enumerators recruited from the Midwifery Department of the Health Polytechnic of the Ministry of Health Yogyakarta.

Data were analyzed using univariate, bivariate using Chi-square, and multivariate using logistic regression analysis techniques. IBM SPSS Statistics version 25 was used to analyze the statistical analysis, which includes the Chi-Square test, correlation, and odds ratio. When $p < 0.05$, an association is considered statistically significant. On September 5, 2023, the Health Research Ethics Commission of the Health Polytechnic of the Ministry of Health Yogyakarta examined and approved the research protocol and methods under the reference number DP.04.03/e-KEPK.1/790/2023. Each responder received and consented to informed consent.

RESULTS

The characteristics of respondents were analyzed based on age, gender, duration of breastfeeding, history of infectious diseases, parents' education, and mother's occupation. These characteristics provide an overview of the study population and are presented in Table 1.

Table 1. Characteristics of Respondents

Characteristics	n	%
Age		
6-12 Months	38	38.0
13-24 months	62	62.0
Gender		
Male	50	50.0
Female	50	50.0
Duration of Breastfed		
<6 Months	20	20.0
6-24 Months	80	80.0
Infectious Diseases		
Suffering	42	42.0
Not Suffering	58	58.0
Father's Education		
Low	17	17.0
High	83	83.0

Characteristics	n	%
Mother's Education		
Low	20	20.0
High	80	80.0
Mother's Occupation		
Employed	19	19.0
Unemployed	81	81.0

According to Table 1, it can be inferred that the respondents majority were aged 13-24 months (62%), half of whom were female and half of whom were male, most of the respondents were breastfed for 6-24 months (94%), most of them never experienced an infectious disease (58%), the majority of fathers (83%) and mothers (80%) had high levels of education, and the majority of mothers were unemployed (81%).

Table 2. Exclusive Breastfeeding Relationship with the Incidence of Stunting

Variables	Incidence of Stunting				Chi-square (p-value)
	Stunting		Not Stunting		
	n	%	n	%	
Exclusive Breastfeeding					
No	15	75.0	5	25.0	0.012
Yes	35	43.8	45	56.2	
Infectious Diseases					
Suffering	25	69.4	11	30.6	0.004
Not Suffering	25	39.1	39	60.9	
Father's Education					
Low	13	81.3	3	18.8	0.006
High	37	44.0	47	56.0	
Mother's Education					
Low	14	70.0	6	30.0	0.046
High	36	45.0	44	55.0	
Mother's Occupation					
Employed	12	63.2	7	36.8	0.202
Unemployed	38	46.9	43	53.1	

Table 2 shows that exclusive breastfeeding, infectious diseases, father's education, mother's education were related to stunting in children aged 6-24 months. The statistical test result found a p-value <0.05. Meanwhile, the mother's occupation was not related to stunting with a p-value of >0.05. The majority of stunted children were non-exclusively breastfed, with the percentage of 75%. Children aged 6-24 months who are exclusively breastfed, 56.2% report no stunting. A significant correlation between the incidence of stunting and exclusive breastfeeding is inferred, with a value of p=0.012, as can be seen in Table 2.

Table 3. Multivariable Analysis of the Exclusive Breastfeeding Relationship and External Variables with the Incidence of Stunting

Variables	Chi-square (p-value)	OR	95% CI	
			Lower	Upper
Exclusive Breastfeeding	0.012	3.857	1.3	11.6
Infectious Diseases	0.004	3.545	1.5	8.5
Father's Education	0.006	5.505	1.4	20.8
Mother's Education	0.046	2.852	0.1	8.2
Mother's Occupation	0.202	1.940	0.7	5.4

Table 3 indicates that the chi-square test value for the variables of father's education, mother's education, and infectious diseases is less than 0.05. It can be concluded that the incidence of stunting had a correlation with the external variables of exclusive breastfeeding namely mother's education, father's education, and infectious diseases.

Exclusive breastfeeding influences stunting in children between the ages of 6 and 24 months with a p-value of 0.012 OR 3.857 (95% CI:1.278-11.638). Children who were non-exclusively breastfed were 3.86 times more likely to experience stunting. Infectious disease is the most dominant factor in the history of breastfeeding with the incidence of stunting among children 6-24 months.

DISCUSSION

The findings revealed that 75% of respondents had children aged 6-24 months who were stunted as a result of not receiving exclusive breastfeeding. The study's odds ratio value of 3.857 indicates that in comparison to children who are exclusively breastfed, children who are not exclusively breastfed have a 3.86 chance of developing stunting. This study is in line with the study of Hikmahrachim, who found that children who do not receive breastmilk are more likely than those who do to be short-statured (Hikmahrachim, Rohsiswatmo, & Ronoatmodjo, 2019).

Breastmilk, produced by the mother is full of all the nutrients that a newborn needs for healthy growth and development (Kementerian Kesehatan Republik Indonesia, 2018). An infant that is breastfed exclusively for six months is given only breastmilk and does not receive any other liquids or solids—not even water—apart from oral rehydration and vitamin, mineral, or medication drops or syrups (Taqwin, Pont, & Iskandar, 2023). The World Health Organization (WHO) and UNICEF recommend breastfeeding for at least six months. It is recommended to introduce solid foods after six months and to continue breastfeeding until the child is 2 years old (World Health Organization, 2019). A previous study also indicated that children who did not have an early breastfeeding initiation had a 1.3 times greater risk of stunting. This suggests that early breastfed initiation is a type of maternal health care and that giving children's nutrition as soon as possible which can lower the risk of stunting. Moreover, exclusively breastfed children under 5 have a 9.3 times lower prevalence of stunting than non-exclusively breastfed (Hikmahrachim et al., 2019). Furthermore, Taqwin's study found that infants who are not breastfed exclusively have a higher risk of stunting compared to those who get exclusive breastfeeding (Taqwin et al., 2023).

It may be inferred from the study's result that the father's education has an impact on the prevalence of stunting, as the chi-square test value for the father's education variable is $p=0.006$ ($p<0.05$). The degree of parental education is one of the key variables influencing the prevalence of stunting in Indonesia. A mother and father with a higher education will reduce the chance of stunting their children by 3–5% (Rachman, Nanda, Larassasti, Rachsanazani, & Amalia, 2021). Furthermore, the data indicated that the variable of mother education correlated with the frequency of stunting, with $p = 0.046$ ($p<0.05$). One major element influencing a child's height is the level of education of their mother (Scheffler et al., 2021). Although maternal and paternal education at all levels is related to child growth and development, maternal education levels show a stronger relationship than paternal education levels (Jeong, Kim, & Subramanian, 2019). This idea is consistent with studies by Petrika, Dahliansyah, and Sulistyaningsih, which show that a one-year increase in maternal education can lower the incidence of stunting in children by 0.42% (Petrika,

Dahliansyah, & Sulistyaningsih, 2023). According to another study, a child's chance of being stunted is 2.4 times lower when their mother has 7-9 years of schooling. The offspring of mothers with some postsecondary education may have a standard deviation of 0.5 greater height than the offspring of mothers with no education. Therefore, it can be said that as education levels increased, the probability of stunting dropped by 7% from the sample average (Alderman & Headey, 2017).

Parental education is one of the variables influencing the nutritional status of the family. Higher-educated parents may increase their knowledge and may have a better understanding of leading a healthy lifestyle and maintaining physical fitness. In this instance, the father's education will influence the family's health education because the father is the family's health educator (Setiawan, Machmud, & Masrul, 2018). Being well-educated and informed means for good family health. Parents' attitudes toward adopting a healthy lifestyle that involves providing an acceptable diet and sufficient nutrition reflect this. In contrast, the findings indicated that the mother's occupation variable's chi-square test value was $p=0.202$ ($p>0.05$), indicating that there is no statistically significant correlation between the mother's occupation with the prevalence of stunting. Suhardjo believed that employment is the key factor in influencing food quality and quantity because it is correlated with income (Suhardjo, 2018). Stunting is associated with family income, according to study in Kediri; up to 67.9% of children under 5 years who are stunted have salaries that are below the minimum wage (Agustin & Rahmawati, 2021). In line with Kaloko's study which states that 67.2% of respondents who have low family income are significantly related to stunting (Kaloko, Marniati, & Mulyani, 2022). In this study, it was not investigated whether family income was allocated to fulfill adequate nutrition for children. Other factors need to be investigated further. This explains why there is no correlation between stunting in children aged 6-24 months and maternal occupation. Furthermore, the lack of a substantial correlation between the job status of women and the prevalence of stunting can be attributed to the fact that housewives and non-working moms often take on an excessive amount of domestic chores and disregard the needs of their families or children's health (Djogo, Betan, & Dion, 2021).

According to the result of the study on the history of infectious diseases, $p=0.004$ ($p<0.05$) on the chi-square test suggested a significant correlation between the incidence of infectious diseases and stunting. This is consistent with the findings of Widari's study, which shows that children who have had diarrhea and/or acute respiratory infection (ARI) diseases are 3.071 times more likely to be stunted than those who have not (N. T. Dewi & Widari, 2018). Studies carried out in Karangasem also demonstrate that viral infections can impede linear growth by initially impacting children under 5 years old nutritional status. This occurs because viral disorders have the potential to lower food intake and obstruct nutritional absorption, leading to a direct loss of nutrients and an increase in metabolic demands. The study's findings show that some characteristics, including a history of infectious diseases such as diarrhea and ARI have a substantial impact on the prevalence of stunting (Sumartini, 2022).

CONCLUSIONS

Exclusive breastfeeding is one of the keys to provide sufficient nutrients for growth and development among children under five. This study found a significant correlation between the history of exclusive breastfeeding and the incidence of stunting in children aged 6-24 months. The educational attainment of both parents and their medical history of infectious diseases are other factors that influence the

prevalence of stunting. Exclusive breastfeeding continues to be promoted among parents and care providers to decrease the prevalence of stunting in children aged 6-24 months. The practice of exclusive breastfeeding also enhances the infant's immune response. reducing the risk of infectious disease.

Author's Contribution Statement: **Sumarah:** Conceptualization, Methodology, Data acuration, Writing- Original draft preparation. **Munica Rita Hernayanti:** Visualization, Investigation, Validation, Writing- Reviewing and Editing,

Conflict of Interest: The authors declare have no conflict interest

Source of Funding: This study was financially supported by Poltekkes Kemenkes Yogyakarta. The funding institution was not involved in the study design, data interpretation, or manuscript preparation.

Acknowledgments: This study was with the support of Poltekkes Kemenkes Yogyakarta. The authors would like to thank the Director of Poltekkes Kemenkes Yogyakarta for the support in carrying out this study. The authors would also like to thank the principal of the Turi Health Centre for allowing the study to be conducted, and all those who had assisted in the study.

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