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Email : editorijhess@gmail.com

Factors Influencing The Incident Of Stunting In West Lancang Village, Dewantara District, North Aceh Regency, 2024

Rildayani[1)], Myrna Lestari AB[2)], Elvieta[3)]
[1)] STIKes Darussalam Lhokseumawe
[2,3)] Poltekkes Kemenkes Aceh

*Corresponding Author
Email : rildadadi@gmail.com

Abstract

Stunting remains a major public health problem that affects child growth and development, particularly in developing countries, including Indonesia. This study aimed to identify factors associated with stunting among children aged 12–23 months in Lancang Barat Village, Dewantara District, North Aceh Regency, in 2024. A quantitative study with a cross-sectional design was conducted involving 75 mothers and their children, selected using total sampling. Data were collected through structured questionnaires and anthropometric measurements. The independent variables included maternal height, maternal education, and exclusive breastfeeding practices, while the dependent variable was the incidence of stunting. Data analysis consisted of univariate and bivariate analyses using the Chi-square test with a significance level of α = 0.05. The results showed that 20.0% of children were stunted or severely stunted. Statistical analysis revealed a significant association between maternal height and stunting (p = 0.002), maternal education and stunting (p = 0.007), and exclusive breastfeeding and stunting (p = 0.001). In conclusion, maternal height, maternal education, and exclusive breastfeeding practices are significant factors influencing stunting among children in Lancang Barat Village. Strengthening maternal education and promoting exclusive breastfeeding are essential strategies to reduce stunting prevalence.

Keywords: Stunting; Exclusive Breastfeeding; Maternal Height; Maternal Education; Children Aged 12–23 Months; Indonesia.

INTRODUCTION

Stunting has been identified as a major public health priority (Prendergast & Humphrey, 2014), with an estimated 160 million children under the age of five affected worldwide (Prendergast & Humphrey, 2014). After years of being overlooked, stunting has also been recognized as a critical global health priority (UNICEF, 2024). It affects approximately one-third of children under five years of age in developing countries, and about 14% of child mortality is attributed to this condition (Tello et al., 2022). The World Health Organization (WHO, 2024a) estimates that if current trends continue, 127 million children under five will experience stunting by 2025. Therefore, significant interventions are required to achieve WHO targets and reduce this number to 100 million (Global Nutrition Report, 2024; WHO, 2023).

In Southeast Asia, the average prevalence of exclusive breastfeeding among infants aged 0–6 months is estimated at 45.1%, which is higher than the global average of 43.8%. However, the region continues to face a substantial burden of undernutrition among children under five, with a stunting prevalence of 27.4%, the second highest compared to other Asian regions (Global Nutrition Report, 2024; UNICEF, 2024). Stunting is a manifestation of impaired physical growth, characterized by height-for-age below the appropriate standard, as well as severe and irreversible mental and cognitive impairment resulting from chronic malnutrition during early life (The ASEAN, 2022). More specifically, stunting is defined as a condition in which a child's height-for-age is below −2 standard deviations (SD) from the WHO median growth standards (Karlsson et al., 2022).

In ASEAN countries, stunting affects nearly all member states, with the highest prevalence recorded in Cambodia, Lao PDR, Indonesia, Malaysia, Myanmar, and the Philippines. Thailand and Vietnam also experience stunting, though at lower rates (The ASEAN, 2022). Compared to other

ASEAN countries, Indonesia's stunting prevalence remains lower than Myanmar (35%) but higher than Vietnam (23%), Malaysia (17%), and Singapore (4%) (Suratri et al., 2023).

Stunting is a process that affects child growth and development from early conception through the third or fourth year of life (Soliman et al., 2021). It is considered a serious concern because it is associated with cognitive delays and long-term consequences that are largely irreversible. Children affected by stunting tend to have reduced mental capacity and learning abilities, experience academic difficulties, and in adulthood often face limited employment prospects (The ASEAN, 2022). Other long-term impacts of stunting reported in various studies include impaired cognitive development that may persist across generations (Handryastuti et al., 2022). These cognitive impairments further affect quality of life and require complex and comprehensive interventions (Handryastuti et al., 2022).

Nutritional stunting is caused by inadequate maternal nutrition, undernutrition during pregnancy, and failure to provide exclusive breastfeeding (Soliman et al., 2021). In addition, short stature in children may result from various factors such as genetic predisposition, short parental height, endocrine disorders, recurrent chronic infections, malnutrition, failure of exclusive breastfeeding, socioeconomic factors, and harmful exposures in early life. Parental height, particularly maternal height, is known to reflect children's adult height and is a significant determinant of stunting in children (Handryastuti et al., 2022; Karlsson et al., 2022).

According to Sindhughosa and Arimbawa (2020), parental height is directly related to children's physical growth. Infant height is influenced by genetic factors inherited from both parents as well as environmental conditions during pregnancy and the postnatal period, including exclusive breastfeeding practices. Child growth and development begin in utero and continue to be influenced by multiple factors after birth. Exclusive breastfeeding has been associated with reduced infectious diseases among infants aged 0–6 months and ensures adequate nutrition during the early stages of life, thereby determining growth and development beyond the age of two years (Tello et al., 2022). Children who are not breastfed are at a higher risk of malnutrition (Campos et al., 2020). Nutrition is considered a key factor in achieving optimal child growth and development, particularly exclusive breastfeeding, which provides numerous health benefits for both mothers and infants (Campos et al., 2020).

Research conducted by Rezaeizadeh et al. (2024) highlights that the first 1,000 days of life are a critical period determining child growth and development. Maternal education has consistently been identified as a significant predictor of child undernutrition that may result in stunting. Stunting adversely affects brain development by reducing cognitive capacity, which lowers long-term employment opportunities and impairs short-term cognitive functioning (H. Hadi et al., 2021). Stunting not only affects health outcomes but also influences other conditions that indirectly impact overall health (M. Hadi, 2023).

Exclusive breastfeeding is considered highly relevant, particularly among children from low-income households, as it provides protection against stunting (H. Hadi et al., 2021). In addition to exclusive breastfeeding, other factors such as maternal education, pregnancy-related complications, birth spacing, and socioeconomic status also contribute to the occurrence of stunting (Santosa et al., 2021). For many years, maternal education has received considerable attention as a determinant of child health, as education and health are theoretically interrelated (Bernard et al., 2007). This relationship is also linked to household purchasing power, as higher levels of education increase women's economic opportunities. Educated women are more likely to obtain better employment and improve household wealth (Agyen et al., 2024). Data from North Aceh Regency based on the E-PPGBM nutritional status records reported 37,826 children under five in 2023, of whom 2,226 were stunted. In 2024, out of 36,552 children under five, 1,964 were identified as stunted in Lancang Barat Village, Dewantara District, North Aceh Regency.

RESEARCH METHODS

This study employed a quantitative research method using a cross-sectional approach to examine the relationships between the variables under investigation. The study was conducted in Lancang Barat Village, Dewantara District, North Aceh Regency. The sample was drawn from the population of mothers residing in Lancang Barat Village who had children aged 12–23 months, totaling 75 respondents.

The research instrument used was a structured questionnaire containing relevant questions related to the study variables. Data analysis included univariate and bivariate analyses. Statistical analysis was performed using the Chi-square test with the assistance of the SPSS version 17.00 computer program, with a significance level set at $\alpha = 0.05$.

RESULTS AND DISCUSSION

Univariate analysis.

Table 1. Respondent Characteristics in West Lancang Village, Dewantara District, North Aceh Regency, 2024

No	Respondent Characteristics	Frequency	Percentage (%)
1	**Age**		
	20-30 years	22	29.3
	31-40 years	48	64.0
	41-50 years	5	6.7
	Total	75	100.0
3	**Occupation**		
	Housewife	44	58.7
	Laborer	25	33.3
	Civil Servant	1	1.3
	Self-Employed	5	6.7
	Total	75	100.0
4	**Lila**		
	Normal	56	74.7
	Not enough	19	25.3
	Total	75	100.0
5	**Mother's Weight**		
	Normal	59	78.7
	Thin	12	16.0
	Obese	4	5.3
	Total	75	100.0

(Source: Primary Data Processed in 2024)

Table 2 Frequency Distribution Based on Maternal Height, Education, and Exclusive Breastfeeding Status in West Lancang Village, Dewantara District, North Aceh Regency, 2024

No	Mother's Height	Jumlah	
		F	%
1	Risky	20	26.7
2	Not Risky	55	73.3
	Total	75	100.0

No	Education	Jumlah	
		F	%

1	Primary Education	22	29.3
2	Secondary Education	40	53.3
3	Higher Education	13	17.3
	Total	75	100.0

No	Exclusive Breastfeeding	Jumlah	
		F	%
1	Exclusive	32	42.7
2	Not Exclusive	43	57.3
	Total	75	100.0

No	kejadian Stunting	Jumlah	
		F	%
1	Normal	60	80.0
2	Short	14	18.7
3	Very short	1	1.3
	Total	75	100.0

(Sumber : Data Primer Diolah Tahun 2024)

Bivariate Analysis

Bivariate analysis was conducted to examine the relationship between the independent variables (education, maternal height, exclusive breastfeeding) and the dependent variable (stunting incidence). The results of the bivariate analysis are as follows:

Table 3
Relationship between Maternal Height and Stunting Incidence in West Lancang Village, Dewantara District, North Aceh Regency, 2024

No	Mother's Height	Stunting events						Total		*p-value*	α
		Normal		Short		Very Short					
		F	%	F	%	F	%	F	%		
1	Risky	5	25.0	14	70.0	1	5.0	20	100.0	0,002	0.05
2	Not Risky	55	100.0	0	0.0	0	0.0	55	100.0		
	Total	60	80.0	14	18.7	1	1.3	75	100.0		

Table 4
Relationship between Education and Stunting in West Lancang Village, Dewantara District, North Aceh Regency
2024

No	Education	Stunting events						Total		*p-value*	α
		Normal		Short		Very Short					
		F	%	F	%	F	%	F	%		
1	Primary Education	12	54.5	9	40.9	1	4.6	22	100.0	0,007	0.05
2	Secondary Education	35	87.5	5	12.5	0	0	40	100.0		
3	Higher Education	13	100.0	0	0	0	0	13	100.0		

	Total	60	80.0	14	18.7	1	1.3	75	100.0

Table 5
Relationship between Exclusive Breastfeeding and Stunting in West Lancang Village, Dewantara District, North Aceh Regency
2024

No	Exclusive Breastfeeding	Stunting events								*p-value*	α
		Normal		Short		Very Short		Total			
		F	%	F	%	F	%	F	%		
1	Exclusive	32	100.0	0	0.0	0	0.0	32	100.0		
2	Not Exclusive	28	65.1	14	32.6	1	2.3	43	100.0	0.001	0.05
	Total	60	80.0	14	18.7	1	1.3	75	100.0		

DISCUSSION

The Relationship between Exclusive Breastfeeding for Six Months and the Incidence of Stunting in Children

Based on a systematic review that analyzed risk factors for stunting among children in 137 developing countries, compared to developed countries, children in developing countries showed a higher proportion of stunting due to the early cessation of breastfeeding (Campos et al., 2020). The discontinuation of exclusive breastfeeding is often followed by the introduction of formula milk, which is not recommended in settings with poor sanitation due to the risk of contamination from unsafe water, microbes, and toxins during preparation. This condition increases the risk of infections in infants and makes them more vulnerable to recurrent illnesses, which may subsequently contribute to undernutrition and stunting (H. Hadi et al., 2021). A study conducted in eastern Indonesia in 2021 reported that one of the most effective strategies to reduce stunting prevalence is the promotion of exclusive breastfeeding, which has been widely proven to support optimal growth during the early stages of a child's life (H. Hadi et al., 2021).

In low- and middle-income countries, household wealth, maternal employment, and maternal education contribute to disparities in stunting prevalence. These factors are also closely associated with differences in breastfeeding practices and the diversity of children's diets prepared by mothers (Harvey et al., 2022). Promoting exclusive breastfeeding in early life can be adopted as one of the most effective, low-cost, and culturally acceptable strategies to reduce stunting in low-income settings (M. Hadi, 2023). The World Health Organization (WHO, 2024b) states that, in addition to reducing infectious diseases that lead to undernutrition and stunting, exclusive breastfeeding can save more than 820,000 lives of children under five years of age annually. Breast milk serves as a vital source of energy and nutrients, meeting at least half of the energy requirements of children aged 6–12 months. The period from birth to the second year of life is critical for growth and development, and inadequate nutrition during this window may result in stunting (Syeda et al., 2021).

The Relationship between Maternal Height and the Incidence of Stunting in Children

Maternal height plays a significant role in influencing the linear growth of offspring during their growth process. Adult height is the result of interactions between genetic factors and environmental conditions experienced during growth. Among adults, short stature has been associated with reduced human capital, and short maternal height is also linked to adverse birth outcomes, including low birth weight and stunting in children. This relationship may be explained by the physical constraints faced by short-statured mothers during pregnancy, such as reduced protein and energy

reserves, smaller reproductive organ size, and limited intrauterine space for fetal growth (Addo et al., 2013). A study by Sumarsono and Irwanto (2022) demonstrated that maternal height significantly influences the incidence of stunting, with an odds ratio (OR) of 3.22. Other studies have also reported that maternal height is associated with birth length (Zhang et al., 2015).

The Relationship between Maternal Education and the Incidence of Stunting in Children

The first 1,000 days of life are widely recognized as a critical period that determines subsequent stages of child growth and development. Maternal education has consistently been identified as a significant predictor of child undernutrition, which may ultimately lead to stunting (Rezaeizadeh et al., 2024). Several studies examining the association between maternal education and stunting have yet to provide a comprehensive understanding of the underlying mechanisms. However, research specifically investigating the impact of parental education on under-five mortality has demonstrated an inverse dose–response relationship, indicating that higher parental education is associated with lower child mortality. Each additional year of maternal education significantly reduces the risk of mortality among children (Rezaeizadeh et al., 2024).

Glewwe (1999) stated that maternal education is often positively correlated with child health and nutritional status in developing countries. One of the most plausible mechanisms is that formal education directly equips prospective mothers with health-related knowledge. Literacy and numeracy skills acquired through education enable mothers to recognize health problems early, make informed decisions regarding child care, and seek appropriate medical treatment. Exposure to modern health concepts through formal education also increases women's acceptance of modern medical services. A study conducted in African countries found that maternal education within the child's environment reduced the risk of stunting and showed differences between rural and urban settings (Agyen et al., 2024).

Yu (2023) emphasized that the relationship between maternal and child health is closely interconnected. Women's educational attainment contributes significantly to parenting concepts and caregiving behaviors, influencing not only individual development but also the quality of future generations. It is increasingly recognized that during the first two years of life, linear growth is strongly influenced by modifiable environmental factors, including social, economic, cultural, and educational conditions (Bernard et al., 2007). Education is also linked to household purchasing power, as higher educational attainment increases women's economic opportunities. Educated women are more likely to secure better-paying jobs and improve household wealth, which in turn enhances food security and nutritional intake for children (Agyen et al., 2024).

Education indirectly influences a child's nutritional status, with low maternal education strongly associated with stunting. This condition is more prevalent among mothers with lower educational backgrounds, as such mothers are nearly twice as likely to have stunted children. Education provides essential knowledge that enables mothers to manage household nutrition effectively, ensure appropriate feeding practices, and reduce the prevalence of child malnutrition (Yani et al., 2023). Evidence from Zimbabwe further supports this relationship, showing that higher levels of female education increase women's economic opportunities. Women with higher education levels tend to obtain better-paying jobs compared to those with lower education, allowing for improved household food purchasing power (Grépin & Bharadwaj, 2015). Education also positions women more favorably within households and empowers them to participate actively in decision-making processes related to child health and nutrition (Behrman, 2015).

CONCLUSIONS

This study concludes that the incidence of stunting among children aged 12–23 months in Lancang Barat Village is significantly associated with maternal height, maternal education, and exclusive breastfeeding practices. Children born to mothers with short stature, lower education levels, and those who did not receive exclusive breastfeeding were more likely to experience stunting. These

findings highlight the importance of improving maternal nutrition, enhancing maternal education, and strengthening exclusive breastfeeding programs as key interventions to prevent stunting. Integrated efforts involving health services, community education, and family support are essential to reduce stunting prevalence and improve child growth and development outcomes.

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