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Determinant factors of stunting children aged 24-59 month

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Abstract

Background: Stunting remains a major public health concern in Indonesia, particularly among children under five years of age. In the working area of Puskesmas Minggir, Sleman Regency, a total of 55 stunted children were identified across five villages in 2025. The determinants of stunting are multifactorial, encompassing nutrition, maternal, and socioeconomic dimensions.

Purpose: To identify the determinant factors associated with stunting in children aged 24-59 month.

Method: A quantitative observational analytic study with a cross-sectional design was conducted from January 15-18 2026, in Sendangrejo Village. A total of 64 respondents (16 stunted, 48 non-stunted) were included. Variables examined were maternal height, maternal education, birth weight, birth length, exclusive breastfeeding, history of infectious disease, child's sex, and family income. Data were analyzed using univariate and bivariate (Fisher's Exact test and Chi-Square) analyses.

Results: Of 64 children, 16 (25%) were classified as stunted. Bivariate analysis revealed a significant association between maternal education level and stunting ($p = 0.002$). Other variables-maternal height, birth weight, birth length, exclusive breastfeeding, history of infectious disease, child's sex, and family income did not show statistically significant associations ($p > 0.05$).

Conclusion: Maternal education level the determinant factor with a statistically significant association with stunting in children aged 24-59 months. Improving access to education for women is an important strategy in stunting prevention efforts.

Keywords: Determinant Factors; Maternal Education; Puskesmas Minggir; Stunting; Toddler.

INTRODUCTION

Stunting is a condition in which a child experiences impaired linear growth resulting in height-for-age below the standard due to chronic nutritional deficiency. The World Health Organization (WHO) reported that the global prevalence of stunting in children under five was 22%, or approximately 149.2 million children, in 2020. Indonesia ranked second in Southeast Asia in terms of stunting prevalence, with a national average of 31.8% (World Health Organization, 2025). Based on the National Child Nutritional Status Survey Indonesia's national stunting rate decreased from 24.4% to 21.6%. In Sleman Regency, the stunting rate fell to 4.41% in 2024 (Sleman District Health Office, 2024).

Stunting begins in utero due to inadequate

maternal nutrition and continues after birth if postnatal nutritional needs are not met. Short-term consequences include impaired brain development, cognitive delays, and physical growth disorders, while long-term consequences include reduced intellectual capacity, increased risk of chronic non-communicable diseases, and lower productivity (UNICEF, 2020).

The determinants of stunting are multifactorial, encompassing maternal characteristics such as height, education, and occupation; child-related factors including birth weight, birth length, and breastfeeding history; and socioeconomic factors such as family income and parenting practices (Wahdah, Juffrie, & Huriyati, 2015). Previous research in the working area of Puskesmas Minggir identified food

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intake adequacy and dietary patterns as significant risk factors for stunting (Warjayati, 2025).

Breast milk is the best and most ideal source of nutrition with a balanced composition that meets the needs of infants during their growth period. Breast milk contains fatty acids that are needed for brain development, so infants who are exclusively breastfed have the potential to excel in their achievements and increase their intelligence. In addition, breast milk is the only food that meets the needs of infants during their growth period until the age of six months (Pangaribuan, Napitupulu, & Kalsum, 2022).

RESEARCH METHOD

This study used a quantitative observational analytic approach with a cross-sectional design. The research was conducted in the working area of Puskesmas Minggir, specifically at Dusun Ngagul Agulan, Soronandan, and Jarakan, Sendangrejo Village, from January 15–18, 2026. A total of 64 respondents were enrolled, comprising 16 children

classified as stunted and 48 as non-stunted, determined based on Puskesmas Minggir medical records and KIA books.

The inclusion criteria were: mothers with children aged 24–59 months in the Puskesmas Minggir working area, mothers who brought their children to Puskesmas Minggir, and mothers who consented to participate. Data were collected using primary questionnaires and secondary data from KIA (Maternal and Child Health) books. The independent variables were maternal height, maternal education level, birth weight, birth length, exclusive breastfeeding status, history of infectious disease (ISPA/upper respiratory infection and diarrhea), child's sex, and family income. The dependent variable was stunting, defined as height-for-age Z-score < -2 SD. Data were analyzed using univariate and bivariate (Fisher's Exact test and Chi-Square) analyses with SPSS software. This study received ethical clearance from the relevant institutional ethics board.

RESEARCH RESULT

Tabel 1. Characteristics of Respondent (N=22)

Variable	Results	P-value
Mother's Age (Mean±SD) (Years)	(33.56.±8.05) (20-59)	
20–39 (Early Adult)	51/79.7	
40–59 (Middle Adult)	13/20.2	
Mother's Height Category (n/%)		0.284
Short (<154.4 cm)	27/42.2	
Normal (≥154.4 cm)	37/57.8	
Mother's Education (n/%)		0.002*
Elementary/Junior High School	2/3.1	
Senior High School	40/62.5	
Bachelor	22/34.3	
Occupation (n/%)		
Housewife	47/73.4	
Private Employee	9/14.1	
Civil Servant / Other	8/12.5	
Family Income (n/%)		0.087
High (≥ Minimum Wage)	44/68.8	
Low (< Minimum Wage)	20/31.3	

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Child's Age (Mean±SD) (Months)	(39.25 ± 10.88) (24-59)	
24–35	33/51.6	
36–47	10/15.6	
48–59	21/32.8	
Gender (n/%)		1.000
Male	27/42.0	
Female	37/58.0	
Birth Weight (n/%)		0.284
Low Birth Weight (<2500 g)	5/8.0	
Normal Birth Weight (≥2500 g)	59/92.0	
Birth Length (n/%)		1.000
Short (<48 cm)	18/28.0	
Normal (≥48 cm)	46/72.0	
Exclusive Breastfeeding (n/%)		1.000
Yes	3/4.7	
No	61/95.3	
History of Infectious Disease (n/%)		0.576
Present	19/30.0	
Absent	45/70.0	
Stunting Status (n/%)		
Yes	16/25.0	
No	48/75.0	

The table shows that the majority of mothers (79.7%, n=51) were in the early adult age group (20–39 years). Regarding maternal height, 42.2% (n=27) were categorized as short (<154.4 cm). Most mothers had moderate education (Senior High School, 62.5%) and were housewives (73.4%). Family income was classified as high (≥UMR) in 68.8% of respondents. Children were aged 24–35 months (51.6%), with a higher proportion of females (57.8%). The vast majority had normal birth weight (92.2%) and normal birth length (71.9%). Exclusive breastfeeding was reported in 95.3% of children, and 70.3% had no history of infectious diseases. Of the 64 total children, 16 (25%) were classified as stunted and 48 (75%) as non-stunted.

Bivariate analysis using Fisher's Exact test revealed that maternal education level was the only variable with a statistically significant association with stunting ($p = 0.002$). All 2 children of mothers with low education were stunted (100%), compared to 5.0% among children of mothers with moderate education and 0% among those with high education. Other variables — maternal height ($p = 0.284$), birth weight ($p = 0.284$), birth length ($p = 1.000$), exclusive breastfeeding ($p = 1.000$), history of infectious disease ($p = 0.576$), child's sex ($p = 1.000$), and family income ($p = 0.087$) — did not reach statistical significance ($p > 0.05$).

DISCUSSION

Birth length describes the linear growth of a baby while in the womb. Short birth length indicates that the baby did not receive adequate energy and protein intake for a sufficiently long period of time. This is caused by the mother not consuming enough nutritious food during pregnancy, resulting in fetal

growth retardation. However, if after birth the infant continues to not receive adequate nutrition for a long period of time, it will have an impact on the child's nutritional status based on TB/U, which can put the child at risk of stunting (Sihaloho, 2024; Utami, Iswati, Santoso, Wahyuningrum, & Gunawan, 2020).

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The results of this study show that there were 18 toddlers with short birth length, 4 toddlers (25%) of whom were stunted and 14 (29.2%) of whom were not stunted. Meanwhile, of the 46 toddlers with normal birth length, 12 toddlers (75%) were stunted and 34 toddlers (70.8%)

Based on the analysis results, a p-value of 1.000 was obtained, which is greater than the significance value of $\alpha = 0.05$ ($1.000 > 0.05$). The variable of birth length of toddlers shows that of the 18 toddlers born with short birth length, 1 toddler (5.6%) experienced stunting and 17 toddlers (94.4%) did not experience stunting. Of the 45 infants born with normal length, 3 infants (6.7%) experienced stunting and 42 infants (93.3%) did not experience stunting. Of the 1 infant born with high length, 0 infants (0.0%) experienced stunting and 1 infant (100%) did not experience stunting. The Fisher's Exact statistical test yielded a p-value of 1.000 ($p > 0.05$). This means that there is no significant relationship between the birth length of toddlers and the incidence of stunting in toddlers.

This study is in line with the other research conducted. That study was a cross-sectional study that evaluated various maternal factors on the incidence of stunting in children under five years of age. The results of the multivariate logistic regression analysis showed that birth length did not have a significant effect on the incidence of stunting ($p > 0.05$) after controlling for various other variables in the model. The OR value for the birth length variable was also not statistically significant, so it was not included as a determinant factor in the final model. This finding supports the main results of this study, which show that in certain contexts, birth length is not a major determinant of stunting after considering other factors (Sholeha, 2023).

Other research also found that birth length had no significant relationship with stunting after controlling for other variables such as maternal height and exclusive breastfeeding. Multivariate analysis showed that the birth length variable had a p-value of 0.287 with an OR value of 1.26 (95% CI 0.80–1.98), which means it was not statistically significant (Sari & Maigoda, 2023).

Birth weight is used to diagnose whether a baby has a normal birth weight or low birth weight (LBW). If a baby is born with LBW, they may be at risk of growth failure, which can lead to stunting. Pregnant women who are malnourished, are too old or too young, or suffer from diseases such as anemia, asthma,

hypertension, and others during pregnancy are more likely to give birth to babies with low nutritional status, LBW, and premature babies (Sihaloho, 2024).

The results of the bivariate analysis in this study obtained a p-value of $0.284 > 0.05$, meaning that there is no relationship between birth weight and stunting in toddlers in the Minggir Community Health Center working area. This is because of the 5 toddlers with low birth weight, 1 toddler (20.0%) experienced stunting and 4 toddlers (80.0%) did not experience stunting. Of the 59 toddlers who did not have LBW, 3 toddlers (5.1%) experienced stunting and 56 toddlers (94.9%) did not experience stunting. The Fisher's Exact statistical test yielded a p-value of 0.284 ($p > 0.05$). This means that there is no significant relationship between infant birth weight and the incidence of stunting in infants.

Breast milk is a complex biological fluid that not only serves as the main source of nutrition, but also contains bioactive components that play an important role in the baby's immune system. Breast milk contains more than 200 basic components, including proteins, fats, carbohydrates, vitamins, minerals, hormones, enzymes, growth factors, white blood cells, and immune substances such as immunoglobulins. All of these elements are balanced in proportion and function to protect infants from infections caused by bacteria, viruses, fungi, and parasites. In addition, the bioactive content in breast milk also plays a role in supporting the optimal development of the baby's immune and digestive systems (Szyller, Antosz, Batko, Mytych, Dziedzic, Wrześniewska, & Pytrus, 2024).

The WHO recommends exclusive breastfeeding for infants from birth until six months of age and continued breastfeeding until the child is two years old. Based on Government Regulation No. 33 of 2012 concerning Exclusive Breastfeeding, infants have the right to receive breast milk until six months of age, taking into account their growth and development (Malonda, Warouw, Kawatu, Sanggelorang, & Sanggelorang, 2020).

According to UNICEF, exclusive breastfeeding is the provision of breast milk without giving additional fluids such as formula, orange juice, honey, tea, water, or additional foods such as bananas, papaya, porridge, and others. Exclusive breastfeeding is the provision of breast milk from birth until the age of six months without adding and/or replacing it with other foods or drinks.

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Based on the results of this study, a p-value of 1.000 was obtained, which is greater than the significance value of $\alpha = 0.05$ ($1.000 > 0.05$). Based on the variable of exclusive breastfeeding, it was found that of the 3 toddlers who did not receive exclusive breastfeeding, 0 toddlers (0.0%) experienced stunting and 3 toddlers (100%) did not experience stunting. Of the 61 toddlers who received exclusive breastfeeding, 4 toddlers (6.6%) experienced stunting and 57 toddlers (93.4%) did not experience stunting. The Fisher's Exact statistical test yielded a p-value of 1.000 ($p > 0.05$). This means that there is no significant relationship between exclusive breastfeeding and the incidence of stunting in toddlers.

The results of a other study conducted showed that of the 28 toddlers who experienced stunting, 5 toddlers (17.9%) were exclusively breastfed and 23 toddlers (82.1%) were not exclusively breastfed. Based on the results of bivariate analysis using the Chi Square test, a p-value of $0.04 < 0.05$ was obtained, meaning that there is a significant relationship between exclusive breastfeeding and stunting in the working area of the Togo- Togo Community Health Center (Sukmawati, Didik, Imanah, & Suwariyah, 2021). The OR value of 0.29 (95% CI: $0.08 - 0.99$) < 1 means that exclusive breastfeeding is a protective factor against stunting in toddlers.

Infectious diseases are health disorders caused by pathogenic microorganisms such as bacteria, viruses, fungi, or parasites. These diseases can spread directly and indirectly from one person to another. Direct transmission occurs through direct contact with an infected person, animal bites, or contaminated soil and water. Meanwhile, indirect transmission can occur through touching objects or consuming food and beverages that have been contaminated with bacteria and viruses.

The results of this study using bivariate analysis obtained a p-value of 0.576, which is greater than the significance value of $\alpha = 0.05$ ($0.576 > 0.05$). The variable of infectious disease history showed that of the 19 toddlers with a history of infectious disease, 2 toddlers (10.5%) experienced stunting and 17 toddlers (89.5%) did not experience stunting. Of the 45 toddlers who did not have a history of infection, 2 toddlers (4.4%) experienced stunting and 43 toddlers (95.6%) did not experience stunting. The Fisher's Exact statistical test yielded a p-value of 0.576 ($p > 0.05$). This means that there is no significant relationship between a history of infectious disease and the

incidence of stunting in toddlers.

The results of this study are in line with other research conducted the analysis results show that there is no significant relationship between a history of infectious diseases (including ARI and diarrhea) and the incidence of stunting, with a p-value of 0.174 for ARI and $p = 0.124$ for diarrhea, indicating that a history of infection does not affect stunting in this sample. This finding indicates that infection may not always be a strong determinant of stunting when controlled by other variables or when its prevalence is low in the study population (Adiesta, Said, Lantara, Jafar, & Dwiyanto, 2025).

In a more recent study, other research conducted analyzed the relationship between a history of infectious diseases and stunting in toddlers. The results showed that there was no significant relationship between a history of infectious disease and the incidence of stunting in toddlers ($p = 0.329$). These findings support the idea that in some population contexts or patterns of infection epidemiology, the relationship between infection and stunting may not be statistically significant when other risk factors are controlled for or when the prevalence of infection alongside stunting is low (Kereh, Sanggelorang, & Musa, 2025).

Infectious diseases suffered by toddlers can interfere with nutrient absorption, thereby reducing the amount of nutrients entering the body, increasing metabolic requirements, and reducing food intake. There is an interrelated interaction between nutritional status and infectious diseases. Infectious diseases can cause malnutrition, which can be caused by the diversion of energy that was originally needed by the body for growth, which is then diverted to the body's resistance to infection.

Pathogenic bacteria that cause chronic infectious diseases can trigger inflammation of the intestinal mucosa. This results in barrier dysfunction, allowing pathogen translocation and producing a systemic inflammatory response that inhibits bone growth hormones.

In addition, malabsorption of nutrients can also worsen malnutrition and contribute to the inhibition of growth hormones, which can slow down the bone growth process. Meanwhile, malnutrition can increase the risk of infection. If toddlers experience these conditions repeatedly over a relatively long period of time and are not treated immediately, their food intake may decrease and interfere with the nutrient absorption process. This can

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increase the risk of stunting in infants (Carvalho et al., 2025; Sulistiyorini, 2025).

Even though toddlers do not have a history of infectious diseases, there are other factors that can cause stunting in toddlers. Environmental hygiene and sanitation factors can also influence the occurrence of infectious diseases, such as hand washing before eating and dirty environments. Food hygiene can have a positive impact on children's nutritional status. Children who consume food that is not properly cleaned can develop infectious diseases, which are usually accompanied by a decrease in appetite and vomiting or diarrhea. This condition can reduce the nutritional status of toddlers and have a negative impact on their growth, which can manifest as stunting (Carvalho, Prasad, Biradar, & Hegde, 2025).

Family income is the total income earned by the head of the family and other family members who contribute to meeting household needs. The amount of income determines the family's ability to provide nutritious food. Families with low incomes tend to consume inexpensive and less varied foods, while families with high incomes have greater opportunities to purchase quality food. However, high income does not always correlate with good nutritional status in children. Because unhealthy food preferences also increase along with high purchasing power. Other research found that family income and mothers' nutritional knowledge had a significant effect on the nutritional status of school children in Babakan Village (Sahdhina, Dina, Fajriah, & Zahra, 2023). This finding is reinforced, which shows a positive relationship between household income and stunting prevention, where increased income improves the quality of food consumption and protein intake for toddlers (Agustin & Rahmawati, 2021).

The bivariate analysis in this study yielded a p-value of 0.087, which is greater than the significance value of $\alpha = 0.05$ ($0.087 > 0.05$). Based on the economic status variable, it was found that out of 44 families with high income, 1 toddler (2.3%) experienced stunting and 43 toddlers (97.7%) did not experience stunting. Out of 20 families with low income, 3 toddlers (15.0%) experienced stunting and 17 toddlers (85.0%) did not experience stunting. The Fisher's Exact statistical test yielded a p-value of 0.087 ($p > 0.05$). This means that there is no significant relationship between family income and the incidence of stunting in toddlers in Sendangrejo Village in 2026.

The results of this study are in line with research in the working area of the Onggunoi Community Health Center, which shows that there is a significant relationship between family economic status and the incidence of stunting with a p-value of 0.003 (< 0.05), where low-income families have a higher risk of experiencing limitations in meeting their children's nutritional needs, which impacts their optimal growth. These results are in line with your research in the Minggir Community Health Center working area, which also shows a relationship between economic status and stunting, even though toddlers from families with high economic status actually experience more stunting, thus showing that the economic influence on stunting does not only depend on income level, but also on consumption patterns and family parenting behaviors (Hamzah, Hamzah, & Lamonge, 2024).

Another relevant study shows that the socioeconomic status of families is significantly related to the incidence of stunting in toddlers ($p < 0.05$), where children from low-income families are at greater risk of stunting than children from high-income families. Researchers explain that economic limitations have an impact on the purchasing power of nutritious food, access to health services, and environmental quality, which indirectly worsens children's nutritional status. These results are in line with this study, which also found a relationship between economic status and stunting, although the direction of the relationship may differ depending on social conditions and family consumption patterns (Sudewi, Sutrisna, Nugraha, Jayanto, & Antasionasti, 2024).

Height is a measurement that describes the bone formation process. Under normal conditions, height increases with age. According to the WHO, maternal height is a risk factor for stunting. The interaction between short mothers and stunted linear growth in children may be due to genetic and environmental factors. These environmental conditions include hygiene, nutritional intake, and reproductive health. The anatomical and metabolic systems of short mothers can affect intrauterine growth, which in turn affects the incidence of stunting (Fajar, Liberty, Ananingsih, & Amalia, 2025).

Based on the analysis results, a p-value of 0.284 was obtained, which is greater than the significance value of $\alpha = 0.05$ ($0.284 > 0.05$). Based on the mothers' height, of the 27 mothers who were short, 0 toddlers (0.0%) were stunted and 27 toddlers (100%)

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were not stunted. Of the 37 mothers who were of normal height, 4 toddlers (10.8%) were stunted and 33 toddlers (89.2%) were not stunted. The Fisher's Exact statistical test yielded a p-value of 0.284 ($p > 0.05$). This means that there is no significant relationship between the mother's height and the incidence of stunting in toddlers.

Maternal height is often used as an indicator of chronic nutritional status during maternal growth. The intergenerational cycle of malnutrition theory explains that mothers with short stature have a greater risk of giving birth to children with stunted growth due to genetic influences and long-term malnutrition experienced by mothers during adolescence. These conditions can affect fetal development during pregnancy. However, the results of this study did not show a significant relationship. This condition may occur because a child's growth after birth is greatly influenced by environmental factors such as parenting practices, the quality of nutritional intake, and access to health services. If these factors are adequately met, the influence of genetic factors can be minimized.

The results of this study are in line with other research, which shows that maternal height is not significantly related to stunting in children aged 24–59 months (Marlina, Yunita, Melviani, & Yulianti, 2025). Another study reports that genetic factors have less influence than environmental factors in determining child growth (Sudigyo, Hidayat, Nirwantono, Rahutomo, Trinugroho, & Pardamean, 2023).

The differences with several other studies that found a significant relationship are likely due to differences in respondent characteristics, sample size, and stunting case distribution. In addition, toddler growth monitoring programs through integrated health service posts in the study area can also help detect and address nutritional problems early on.

Based on Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System, education is defined as a conscious and planned effort to create a learning process that enables students to actively develop their potential, so that they have religious spiritual strength, self-control, personality, intelligence, noble character, and skills that are useful for themselves, as well as for society, the nation, and the state. Other research findings show that a mother's level of education affects the health of her family, particularly in terms of the nutritional status and parenting practices of her children.

Mothers' knowledge and ability to care for their children's health are greatly influenced by their level of education, because the higher the mother's education, the greater her ability to choose nutritionally balanced foods that are affordable and of good quality (Nurmalasari, Anggunan, & Febriany, 2020).

Based on the analysis results, a p-value of 0.002 was obtained, which is smaller than the significance value of $\alpha = 0.05$ ($0.002 < 0.05$). The variable of maternal education shows that of the 2 mothers with low education, 2 toddlers (100%) were stunted and 0 toddlers (0.0%) were not stunted. Of the 40 mothers with medium education, 2 toddlers (5.0%) were stunted and 38 toddlers (95.0%) were not stunted. Of the 22 mothers with high education, 0 toddlers (0.0%) were stunted and 22 toddlers (100%) were not stunted. The Fisher's Exact statistical test yielded a p-value of 0.002 ($p < 0.05$). This means that there is a significant relationship between maternal education and the incidence of stunting in toddlers in Kalurahan Sendangrejo in 2026.

The results of this study are in line with the other research which shows that maternal education has a significant relationship with the incidence of stunting in toddlers. The study explains that mothers with higher levels of education tend to have better abilities in understanding health information, including fulfilling children's nutritional needs, proper feeding practices, and utilizing health services such as integrated health service posts and immunizations. The ability to access and understand health information plays an important role in shaping parenting behaviors that support optimal child growth (Sholeha, 2023).

These findings are also supported by a report from the World Health Organization (WHO, 2022), which states that maternal education is one of the social determinants of health that plays an important role in stunting prevention efforts in various developing countries. Mothers with higher levels of education generally have better health literacy, enabling them to make better decisions regarding the selection of nutritious foods, hygiene practices, and the use of health care facilities. This contributes to improved child nutrition and growth.

Additionally, a joint report by UNICEF, WHO, and the World Bank (2023) on global stunting estimates also confirms that a mother's level of education is closely related to child feeding practices and the quality of parenting within the household. Mothers with higher

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levels of education tend to be more active in seeking information about child health, understanding the importance of providing balanced nutrition, as well as being able to apply better child care practices. Thus, maternal education not only influences knowledge, but also influences health behaviors within the family, which ultimately impacts the nutritional status of children.

Biologically, the growth of boys and girls has slightly different patterns. Boys generally have higher energy and protein requirements due to their higher rate of body mass and muscle tissue growth in the early stages of life. This condition means that boys require greater nutritional intake to support optimal growth. If these nutritional needs are not adequately met, boys are potentially more vulnerable to growth disorders. These biological differences indicate that physiological factors can influence children's nutritional needs during growth (Jobarteh, Conway-Moore, Yadav, Tata, Fahmida, Faye, & Heffernan, 2024; Thurstans, Sessions, Dolan, Sadler, Cichon, Isanaka, & Khara, 2022).

However, these biological differences do not directly determine the occurrence of stunting. Children's nutritional status is more influenced by environmental and social factors, including the quality of food intake, child feeding practices, environmental sanitation conditions, and access to health services. These factors play an important role in supporting optimal child growth and development. Several studies also show that although the prevalence of stunting in boys is often reported to be slightly higher than in girls, this difference is not always statistically significant and is more influenced by environmental conditions and family socioeconomic factors (Thurstans et al., 2022; Namubamba, Wamani, Namaganda, Namagala, Cheputyo, Muramuzi, & Kamukama, 2024).

Based on the results of the analysis of this study, a p-value of 1.000 was obtained, which is greater than the significance value of $\alpha = 0.05$ ($1.000 > 0.05$). Based on the variable of toddler gender, it was found that of the 27 male toddlers, 7 toddlers (25.9%) were stunted and 20 toddlers (74.1%) were not stunted. Of the 37 female toddlers, 9 toddlers (24.3%) experienced stunting and 28 toddlers (75.7%) did not experience stunting. The Fisher's Exact statistical test yielded a p-value of 1.000 ($p > 0.05$). This means that there is no significant relationship between the gender of infants and the incidence of stunting among infants.

These findings are consistent with other research which states that gender has no significant relationship with the incidence of stunting in toddlers. The study explains that social and environmental factors have a greater influence on child growth than biological factors such as gender (Sari & Maigoda, 2023). Similar results were also found in a report by the World Health Organization, which states that stunting is a chronic nutritional problem influenced by various multidimensional factors, including diet, health conditions, sanitation, and family socioeconomic conditions (World Health Organization, 2022).

CONCLUSION

Maternal education level the determinant factor with a statistically significant association with stunting in children aged 24-59 months. Improving access to education for women is an important strategy in stunting prevention efforts

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