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Mother's knowledge factors regarding the incident of stunting in toddlers

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Abstract

Background: Stunting is a chronic nutritional problem in toddlers that has long-term impacts on physical growth, cognitive development, and the quality of human resources. One of the factors that plays a crucial role in preventing stunting is maternal knowledge, as mothers play a key role in ensuring nutritional needs, parenting patterns, and monitoring children's growth and development.

Purpose: To determine the relationship between the level of maternal knowledge and the incidence of stunting in toddlers.

Method: This study used a quantitative design with a cross-sectional approach. The study was conducted from August to October 2025, with a population of 412 mothers with toddlers. A sample of 80 mothers was selected using a purposive sampling technique. Data were collected using a questionnaire to measure maternal knowledge about stunting and anthropometric measurements to determine toddler stunting status based on WHO standards. Data analysis was performed using SPSS through univariate and bivariate analysis.

Results: The results showed that most mothers had good knowledge about stunting. The incidence of stunting was higher among toddlers whose mothers had less knowledge than among mothers with good knowledge. Statistical tests showed a significant relationship between maternal knowledge and stunting in toddlers ($p = 0.000$).

Conclusion: Maternal knowledge is significantly related to the incidence of stunting in toddlers and plays an important role in stunting prevention efforts.

Keywords: Maternal Knowledge; Stunting; Toddlers.

INTRODUCTION

Stunting is a condition of growth failure in children due to chronic malnutrition and recurrent health problems, characterized by a length or height below -2 standard deviations according to WHO growth standards for a specific age (Damayanti, Ekawati, Suryani, & Zaman, 2025). The impact of stunting is not only seen in delayed physical growth, but is also associated with impaired cognitive development, decreased learning ability, impaired neuropsychological development, decreased immunity, and an increased risk of chronic diseases in adulthood (Mulyani, Khairinisa, Khatib, & Chaerunisaa, 2025). Several studies have shown that stunted children tend to have lower educational achievement, decreased work productivity, and lower

adult income, thus contributing to long-term economic losses and human resource quality (Awaludin, Nurrachmawati, Fitriani, & Reski, 2025). Therefore, stunting is seen as a serious public health problem and a global priority, so its prevention requires planned, multisectoral, and evidence-based efforts that target underlying causes such as maternal and child nutrition, recurrent infections, sanitation, and socio-economic conditions from the First 1.000 Days of Life (Vaivada, Akseer, Akseer, Somaskandan, Stefopoulos, & Bhutta, 2020).

Globally, stunting remains a major public health problem. The WHO estimates that approximately 148–149 million children under five (approximately 22–23% of the world's children under five) have

experienced stunting in recent years, with the highest burden in low- and middle-income countries, particularly South Asia and Sub-Saharan Africa (Dessie, Li, Nghiem, & Doan, 2025). In Indonesia, the Indonesian Nutritional Status Survey and various national analyses reported a stunting prevalence of 21.6% in 2022, a decrease compared to previous years but still considered high (Hayati, Nurlaily, & Hasanah, 2025). The government is targeting a reduction of up to 14% by 2024 as part of its strategy to accelerate stunting reduction and achieve the targets of the National Medium-Term Development Plan (Wulandari, Laksono, Bela, Fatiah, Rohmah, Sukoco, & Luthviation, 2025). Although the national trend shows a decrease in prevalence from around 27.7% in 2019 to around 21.6% in 2022 and continues to decline thereafter, this achievement is still above the WHO maximum threshold (20%) and far from the established national target (Suparji & Surtinah, 2024).

Based on an analysis of malnutrition and stunting factors in various regions of Indonesia, malnutrition among toddlers tends to be higher in areas with socioeconomic vulnerability, exposure to disasters, and limited access to health services, including in several districts in Sulawesi and other areas outside Java (Ayuningtyas, Hapsari, Rachmalina, Amir, Rachmawati, & Kusuma, 2022). At the primary health care level, several community health centers in Indonesia report a stunting prevalence of toddlers above 10%, with some locations reaching over 20%, indicating that chronic malnutrition remains a concern despite ongoing national stunting reduction programs (Hariati & Aprianti, 2025). Data from several community health centers indicate that the number of stunted toddlers can fluctuate from month to month, but the tendency for increasing cases in certain periods is often related to inappropriate parenting patterns, limited parental time, and a lack of nutritional knowledge in toddler care (Siboro, Rochadi, Sinaga, Manurung, & Bancin, 2025).

Maternal knowledge is a key factor in stunting prevention, as mothers play a direct role in nutritional fulfillment, feeding practices, health care, and monitoring child growth and development from the first 1000 days of life onward (Saleh, Syahrul, Hadju, Andriani, & Restika, 2021). Various studies have shown that low nutritional and parenting knowledge is associated with inappropriate practices, such as not

providing exclusive breastfeeding, providing age-inappropriate or unbalanced complementary foods, and a lack of attention to immunization and hygiene, which ultimately increase the risk of chronic malnutrition and stunting (Anggraeni, Budiawan, & Handayani, 2025; Susanti & Sari, 2022).

Mothers with inadequate nutritional knowledge tend to be unable to plan and provide a diverse and nutritious diet for their children, making them more susceptible to linear growth retardation and developmental disorders (Putri, Adiwinoto, Arundani, Nugraheni, & Adnyana, 2024). Conversely, mothers with good knowledge of nutrition, exclusive breastfeeding, complementary feeding, and disease prevention are better able to make informed decisions regarding food selection, feeding patterns, and utilization of health services and integrated health posts, which have been shown to be associated with a lower risk of stunting and more optimal feeding practices (Herman, Saleh, & La Ode, 2025).

RESEARCH METHOD

This research is a quantitative study with a cross-sectional study design that aims to determine the relationship between maternal knowledge and the incidence of stunting in toddlers. The study was conducted with a single measurement without providing intervention to respondents. This study was conducted from August to October 2025 in the working area of the Bonebobakal Community Health Center, Banggai Regency, Central Sulawesi Province. The population in this study were all mothers with toddlers in the area, totaling 412 mothers. From this population, a sample size of 80 mothers with toddlers was determined, selected based on certain considerations in accordance with the research objectives.

The sampling technique used was purposive sampling, which is a technique of selecting samples intentionally based on criteria established by the researcher. Inclusion criteria in this study included: mothers with toddlers aged 12–59 months, domiciled in the Bonebobakal Community Health Center working area, willing to be respondents, and able to communicate well. The exclusion criteria included: mothers who were not present during the data collection process, mothers with toddlers with congenital abnormalities or certain chronic diseases,

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and mothers who did not complete the questionnaire completely.

The research instruments used were a questionnaire to measure maternal knowledge about stunting and anthropometric measurements to determine stunting status in toddlers based on WHO growth standards. Anthropometric data were obtained by measuring toddlers' height using appropriate,

calibrated measuring instruments. The collected data were then processed and analyzed using the Statistical Package for the Social Sciences (SPSS) program, with univariate analysis to describe the distribution of respondent characteristics and bivariate analysis to determine the relationship between maternal knowledge and stunting incidence in toddlers.

RESEARCH RESULTS

Table Characteristics of Respondent (N=80)

Variable	Results	P-value
Age (Mean±SD) (Range) (Years)	(30.9±8.53) (18-47)	
<20 years	6/7.5	
20–35 years	47/58.8	
>35 years	27/33.8	
Maternal Education (n/%)		
Elementary School/Equivalent	7/8.8	
Junior High School/Equivalent	9/11.3	
Senior High School/Equivalent	49/61.3	
College	15/18.8	
Maternal Occupation (n/%)		
Housewife	54/67.5	
Farmer/Laborer	3/3.8	
Private Employee	9/11.3	
Self-Employed	5/6.3	
Public Servant	9/11.3	
Toddler Age (n/%)		
12–23 months	24/30.0	
24–35 months	20/25.0	
36–47 months	6/5.5	
48–59 months	24/30.0	
60–71 months	6/7.5	
Toddler Gender (n/%)		
Male	40/50.0	
Female	40/50.0	
Maternal Knowledge about Stunting (n/%)		
Good	71/88.8	0.000
Poor	9/11.3	

The table above shows that the average age of respondents and standard deviation is (30.9±8.53) with an age range of (18-47) years. The majority of respondents have a high school education level, namely 49 (61.3%), with the majority of respondents being housewives, namely 54 (67.5%). The majority of respondents had toddlers aged

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12-24 months and 48-59 months, with the same result of 24 (30.0%) and the same gender of toddlers, 40 (50%), and the majority of mothers had good knowledge, with a total of 71 (88.8%). The correlation analysis showed a significant relationship between maternal knowledge and the incidence of stunting in toddlers, where toddlers who experienced stunting were more often found in mothers with lower levels of knowledge than mothers with good knowledge, and the results of the statistical test showed a significant p-value ($p < 0.05$), so it can be concluded that maternal knowledge plays an important role in the incidence of stunting in toddlers

DISCUSSION

The results of the study showed a significant relationship between maternal knowledge and the incidence of stunting in toddlers, as evidenced by a p-value of 0.000 ($p < 0.05$). This finding confirms that maternal knowledge is a crucial factor in determining toddler growth status. Mothers with good knowledge tend to be able to implement more appropriate parenting practices and nutritional needs, thus lowering the risk of stunting in children.

Proportionally, the study results showed that of the 71 mothers with good knowledge, almost all of their toddlers had normal nutritional status, and only a small proportion experienced stunting. This indicates that maternal knowledge serves as a protective factor against stunting. Adequate knowledge enables mothers to understand the importance of a balanced nutritional intake as a foundation for children's physical growth, including selecting diverse and nutritious foods according to the principles of balanced nutrition and "fill my plate" to ensure nutritional needs are met and children avoid stunting and other nutritional problem (Hayati, Nurlaily, & Hasanah, 2025).

These findings align with health behavior theory, which places knowledge as the initial domain in the formation of health attitudes and behaviors. Within the Knowledge Attitude Practice (KAP) theoretical framework, behavior change occurs through sequential stages: individuals first acquire knowledge, then develop positive attitudes/beliefs, and finally apply these beliefs in daily practice (Kang & Bagaoisan, 2024). Good knowledge has been shown to be positively correlated with more health-promoting attitudes, and good attitudes are subsequently associated with healthier practices in various contexts, including infant and young child feeding (IYCF) practices and disease prevention behaviors (Jalil, Chong, Jalaludin, Wong, & Hmwe, 2024). Several KAP-based intervention studies have shown that increasing knowledge through health education can improve attitudes and encourage

behavior change, such as adherence to nutritional recommendations and healthier parenting (Ng, 2024).

The results of this study also align with various previous studies showing that maternal knowledge about nutrition and childcare is significantly associated with nutritional status and the incidence of stunting in toddlers. A systematic review in agricultural areas found that mothers with high nutritional knowledge had a significantly lower proportion of stunted toddlers than mothers with less knowledge (Saputri, Pangestuti, & Rahfiludin, 2021). Another literature study in 2024 also reported that low maternal nutritional knowledge was significantly associated with an increased incidence of stunting in children (Daniyanti & Kusnul, 2024). A study in Sleman, Yogyakarta, showed that maternal knowledge about nutrition was moderately but significantly associated with the incidence of stunting in toddlers, where mothers with better knowledge were more likely to have children with normal nutritional status (Qosim & Hutasoit, 2024).

Furthermore, maternal knowledge plays a crucial role in decision-making regarding exclusive breastfeeding practices, timely and age-appropriate provision of complementary foods, and utilization of health services such as integrated health service posts. Mothers with good knowledge of exclusive breastfeeding tend to maintain breastfeeding without additional food or drink for up to 6 months and avoid introducing MP-ASI early, thereby reducing the risk of infection and growth and developmental disorders (Samaria, 2024). Education about MP-ASI has been shown to improve mothers' understanding of appropriate starting times, frequency, texture, and variety of foods, thus making MP-ASI provision practices more adequate to support child growth (Sangadji & Veronika, 2021).

In contrast, among mothers with less knowledge, the proportion of stunting cases was reported to be higher and is a significant risk factor for stunting in

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toddlers (Herman et al., 2025). In some regions, mothers with low nutritional knowledge were recorded to have more stunted children than mothers with sufficient or good knowledge, indicating that limited knowledge has a direct impact on suboptimal parenting and feeding practices (Qosim & Hutasoit, 2024). Lack of knowledge makes mothers unable to plan balanced nutritional menus, less aware of the importance of animal protein sources, and inconsistent in implementing age-appropriate feeding patterns for their children (Berutu, Rosmiati, Emilia, Haryana, & Ingtyas, 2024). Other studies also show that mothers with low knowledge and attitudes towards stunting prevention tend not to provide exclusive breastfeeding, do not pay attention to balanced nutrition for complementary foods, and do not complete immunizations, making children more susceptible to infectious diseases that contribute to stunting (Anggraeni et al., 2025).

These results are consistent with previous findings showing that exclusive breastfeeding practices and inappropriate complementary feeding, largely influenced by low maternal knowledge, are important risk factors for stunting in toddlers. Lack of knowledge about complementary feeding affects the appropriate starting age, frequency, portion size, and food diversity, so that children often receive inadequate and less diverse complementary foods (Ramdika, Fajar, Flora, & Rosyada, 2025). This low knowledge is also associated with a lack of compliance with toddler growth monitoring and utilization of nutrition education services, resulting in growth problems not being detected promptly. Cumulatively, poor stunting prevention practices, delayed or inaccurate introduction of complementary feeding, and low awareness of growth and development monitoring increase the risk of stunting in children (Mardhiyah et al., 2024).

A systematic study showed that maternal nutritional knowledge and parenting practices were significantly associated with nutritional status and stunting incidence in toddlers aged 6–24 months in agricultural areas, particularly through complementary feeding practices, improved hygiene, and sanitation (Saputri, Pangestuti, & Rahfiludin, 2021). These findings align with various nutrition education interventions that demonstrate that increased maternal and family knowledge is followed by improved practices, such as toddler diets,

utilization of nutritious local foods (e.g., processed mackerel), and nutritional status monitoring, leading to improved weight and nutritional status in toddlers (Elizar, Putri, Prihatin, Kartinezahri, Nurmila, Rosyita, & Jasmiati, 2025). Nutrition education through various media, including videos, booklets, mother's classes, Android applications, and intensive counseling, has been consistently shown to improve the knowledge, attitudes, and behaviors of pregnant women and mothers of toddlers regarding stunting prevention (Hapsari, Rozi, Asyifa, Putranegara, & Balqis, 2022).

CONCLUSION

There is a significant correlation between maternal knowledge and the incidence of stunting in toddlers. Mothers with good knowledge tend to have toddlers with normal nutritional status, while stunting is more common in toddlers whose mothers have less knowledge. Therefore, increasing maternal knowledge through health education and nutrition counseling needs to be continuously improved as a crucial strategy in preventing and reducing stunting rates.

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