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The Relationship Between Maternal Knowledge and the Incidence of Stunting in Toddlers in South Buton Regency in 2025

Chintya Mulia F La Ode Hibali *, Wa Ode Salma and Hilda Harun

Master of Public Health Study Program, Faculty of Public Health, Halu Oleo University, Address: Jl. H. E. Mokodompit, Anduonohu, Kendari, Southeast Sulawesi, Indonesia.

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Abstract

Stunting in toddlers is a significant public health problem because it impacts physical growth, cognitive development, and the quality of human resources in the future. Risk factors for stunting can be influenced by maternal knowledge, both during pregnancy and after childbirth. This study aims to determine the correlation between maternal knowledge and the incidence of stunting in toddlers in South Buton Regency. This study used an observational analytical case-control design with a sample of 188 respondents, consisting of 94 cases of stunted toddlers and 94 controls with normal nutrition, selected through purposive sampling. The results of statistical tests showed a significant relationship between maternal knowledge ($p < 0.05$) and the incidence of stunting in toddlers with a significance value of 0.000. This finding emphasizes the importance of improving maternal knowledge about nutrition to prevent stunting. This effort is necessary for optimal growth and development of toddlers, while also supporting the achievement of the national target of stunting reduction.

Keywords: Toddler; Mother; Knowledge; Stunting

1. Introduction

Stunting is a form of chronic nutritional problem that marks the disruption of linear growth in children from early life and has a broad impact on various aspects of health. This condition is not only evident in age-appropriate height but also reflects long-term failure to meet nutritional needs, frequent exposure to infections, and suboptimal parenting practices during critical periods of growth (Salma et al., 2021). The impacts of stunting are multidimensional, including decreased cognitive capacity, reduced learning ability, increased susceptibility to disease, and decreased productivity in adulthood. Stunting is an indicator of human resource quality, as impaired growth at an early age has the potential to reduce a person's biological and intellectual development potential throughout life (Rahayu et al., 2018).

Globally, the prevalence of stunting remains high. In 2020, approximately 149.2 million children under five were recorded as stunted, and this figure remained unchanged until 2022. In 2023 and 2024, the number increased again, reaching approximately 149–150 million children under five, and is projected to remain at around 127 million in 2025. This remains far from the global target of fewer than 100 million children under five (WHO, 2025). This trend indicates that stunting reduction requires a more comprehensive approach, including strengthening household behavioral factors, which have often been overlooked.

Indonesia, as part of the Southeast Asian region, also still faces a relatively high stunting prevalence, at around 27% in 2024. However, the national trend shows a decline in the past four years, from 24.4% (2021) to 19.8% in 2024, exceeding the RPJMN target. The government targets a reduction in prevalence to 18.8% by 2025. However, achieving

* Corresponding author: Wa Ode Salma

this target is highly dependent on the effectiveness of interventions at the household level, particularly those related to nutrition education and parenting behaviors (Ministry of Health of the Republic of Indonesia, 2025).

In Southeast Sulawesi, stunting prevalence fluctuated, reaching 30.2% in 2021, 27.6% in 2022, and then rising again to 30% in 2023. Several districts recorded high rates, such as Central Buton (41.6%), Bombana (35.3%), and South Buton (32.6%) (South Sulawesi Health Office, 2024). Meanwhile, in South Buton Regency, stunting prevalence was recorded at 33.87% in 2020, decreased to 31.92% in 2021, increased to 32.6% in 2022, and dropped significantly to 24% in August 2023 (South Buton Health Office, 2025). This fluctuation indicates that despite progress, efforts to reduce stunting still require consistent strategic interventions.

Among the various factors influencing stunting, maternal knowledge is a crucial determinant because it forms the basis for developing parenting behaviors that determine the quality of a child's growth. Adequate maternal knowledge regarding balanced nutrition, toddler nutritional needs, exclusive breastfeeding practices, age-appropriate complementary feeding (MP-ASI), and infection prevention principles plays a crucial role in ensuring that a child's basic needs are met during the most sensitive growth period (Margawati & Astuti, 2018). Mothers with a good level of knowledge tend to be better able to make informed decisions, from selecting nutritious foods, regulating meal frequency and portions, to maintaining a clean environment that supports a child's health. Conversely, limited knowledge can lead to inappropriate parenting practices, serving nutritionally poor MP-ASI (MP-ASI) foods, a lack of dietary variety, inadequate sanitation, or delays in seeking medical attention when a child shows signs of infection. These conditions ultimately increase the risk of linear growth disorders and increase the likelihood of stunting (Khoirun Nisa & Sukesi, 2022; Putri et al., 2021).

The urgency of this research stems from the fact that despite the implementation of various stunting reduction programs, family knowledge, particularly among mothers, remains a major challenge in many areas, including South Buton. This lack of knowledge can be a significant barrier to the success of nutrition and child health intervention programs. Therefore, analyzing the relationship between knowledge and stunting in toddlers is crucial to ensure that interventions are not only structural but also address the behavioral factors underlying daily parenting practices. The results of this study are expected to provide a scientific basis for strengthening nutrition education programs that are more targeted and sustainable.

2. Materials and methods

This research was conducted in South Buton Regency, Southeast Sulawesi, focusing on five community health centers (Puskesmas): Batauga Community Health Center, Sampolawa Community Health Center, Bahari Community Health Center, West Siompu Community Health Center, and Kadatua Community Health Center. The study employed an observational analytical study with a case-control design. The population comprised all 1,411 mothers with stunted toddlers in South Buton Regency in 2024. The sample used in this study was 188 respondents consisting of 94 case respondents and 94 control respondents, with inclusion criteria in the case sample, namely mothers with toddlers aged 24–59 months who experienced stunting (TB/U < -2 SD), domiciled in South Buton Regency for at least 6 months, have complete pregnancy data in the KIA Book and medical record data, and are willing to be respondents, while exclusion criteria include toddlers with chronic diseases or congenital abnormalities that affect growth, maternal pregnancy data that is not available or incomplete in the KIA Book or medical records, mothers who refuse or are unable to be interviewed, and children who are not biological children (adopted). Then the inclusion criteria in the control sample included mothers with toddlers aged 24–59 months who were not stunted (H/U ≥ -2 SD), domiciled in South Buton Regency for at least 6 months, had complete pregnancy data in the KIA Book and medical record data, and were willing to be respondents through informed consent, while the exclusion criteria included toddlers with chronic diseases or congenital abnormalities that could affect growth, maternal pregnancy data that was not available or incomplete in the KIA Book or medical record, mothers who refused or were unable to be interviewed, and children who were not biological children (adopted). The research sample data were collected using a systematic and measured questionnaire and then analyzed univariately and bivariately using SPSS IBM version 23. This research was conducted after the researcher obtained the Research Ethics Code issued by the Association of Public Health Experts (IAKMI) of Southeast Sulawesi.

3. Results and discussion

3.1. Univariate Analysis

3.1.1. Respondent Characteristics

Table 1 Characteristics of Research Respondents

Maternal Age Category	Number (n)	Percentage (%)
20–35 years	111	59
>35 years	77	41
Total	188	100%
Mother's Job	Number (n)	Percentage (%)
Housewife	127	67.6
Trader	25	13.3
Farmer	25	13.3
Private sector employee	7	3.7
ASN	4	2.1
Total	188	100.0
Mother's Education	Number (n)	Percentage (%)
Bachelor	15	8.0
Senior High School	163	86.7
Junior High School	10	5.3
Total	188	100

Source: Processed Primary Data, 2025

Table 1 shows that the majority of respondents are in the active reproductive age group where most mothers are in the age range of 20-35 years as many as 111 people (59%), while mothers aged over 35 years amounted to 77 people (41%). In terms of occupation, the majority of mothers are housewives, namely 127 people (67.6%). In addition, 25 people (13.3%) work as traders and farmers, while a small number work as private employees (7 people; 3.7%) and civil servants (4 people; 2.1%). In terms of education, mothers with the highest education of high school dominate the distribution of data compared to other education, it can be seen that mothers with high school education are 163 people (86.7%), while those with a bachelor's degree are 15 people (8.0%) and junior high school are 10 people (5.3%).

3.1.2. Research Variables

Mother's Knowledge

Table 2 Distribution of Respondents Based on Mother's Knowledge

Mother's Knowledge	Number (n)	Percentage (%)
Good	80	42.6
Not enough	108	57.4
Total	188	100

Source: Processed Primary Data, 2025

Table 2 shows that mothers with insufficient knowledge have a higher percentage than mothers with good knowledge. This can be seen from the 188 respondents, 80 (42.6%) had good knowledge, while 108 (57.4%) had poor knowledge.

3.1.3. Stunting Incident

Table 3 Distribution of Respondents Based on the Incidence of Stunting in Toddlers

Stunting Incident	Number (n)	Percentage (%)
Stunting	94	50
No Stunting	94	50
Total	188	100

Source: Processed Primary Data, 2025

Table 3 shows that of the 188 respondents, 94 (50%) had mothers with stunted toddlers, and 94 (50%) had mothers with non-stunted toddlers. Because this study used a case-control design, the table analyzes two groups: the stunted group as the case group and the non-stunted group as the control group.

3.2. Bivariate Analysis

Table 4 Results of the Analysis of the Relationship Between Maternal Knowledge and the Incidence of Stunting in Toddlers in South Buton Regency

Knowledge	Stunting Incident				Total		Mark p-value
	Stunting		No Stunting				
	n	%	n	%	n	%	
Good	8	8.5	72	76.6	80	42.6	0.000
Not enough	86	91.5	22	23.4	108	57.4	
Total	94	100	94	100	188	100	

Source: Primary Data Analysis Results Using SPSS, 2025

Table 4 shows that maternal knowledge levels have a very strong relationship with the incidence of stunting in toddlers. Mothers with good knowledge have a much higher proportion of non-stunted toddlers (76.6%) than those with stunting (8.5%). Conversely, among mothers with less knowledge, the majority of toddlers actually experienced stunting (91.5%), while only 23.4% were not stunted. The bivariate test results showed a p-value of 0.000 and below the α value (0.05), thus concluding that there is a significant relationship between maternal knowledge levels and the incidence of stunting in toddlers.

The results of the above study are in line with the results of research conducted by Wardita, et al (2021) that maternal knowledge has a significant correlation with the incidence of stunting in toddlers with a p-value of 0.001. In this study, it was stated that maternal knowledge about stunting can be caused by age and education factors. Low maternal knowledge can affect mothers' attitudes and behaviors in providing nutritious food for children, so this can increase the chance of stunting in their children (Wardita et al, 2021). The results of other studies are also in line with the results of the above study, namely research conducted by Hasnawati et al (2021), which found a relationship between the level of maternal knowledge and the incidence of stunting in toddlers with a p-value of 0.02. The study also found that parental knowledge can help improve nutritional status in children to achieve growth maturity. Inadequate knowledge, lack of understanding of good eating habits, and a lack of understanding about stunting determine mothers' attitudes and behaviors in providing food for their children, including the right type and amount so that children can grow and develop optimally (Hasnawati et al, 2021).

Maternal knowledge is a crucial determinant in preventing stunting in toddlers because it forms the basis for developing attitudes, health behaviors, and decision-making related to meeting children's nutritional needs. Adequate nutritional knowledge enables mothers to understand the importance of nutrition, a balanced diet, macro- and micronutrient needs, and the long-term impact of malnutrition on children's growth and development (Juniantari et al., 2024). In the context of public health, maternal knowledge is not only viewed as a cognitive aspect referring to the information mothers possess, but also encompasses the ability to understand, interpret, and apply that information in daily practice. Therefore, knowledge is often an important indicator of the quality of care and a mother's ability to practice proper feeding, monitor child growth, and recognize early symptoms of nutritional disorders (Aghadiati et al., 2023).

Good knowledge regarding nutrition and child health is formed from various sources such as formal education, access to health information through mass media and the internet, personal experience, counseling from health workers, community interactions, and government-organized health programs (Fikriya & Mirwanti, 2024). Mothers with higher education generally tend to have better knowledge regarding infant and toddler feeding practices and the formation of eating habits, as they are the ones who prepare food, from menu planning, shopping, cooking, preparing, and distributing food (Husnaniyah et al., 2020). However, formal education is not the sole determinant, as even mothers with lower levels of education can have good knowledge if they receive intensive guidance from cadres or health workers. On the other hand, limited access to information, lack of exposure to health education, low nutritional literacy, and certain cultural or religious beliefs within the family can hinder the development of adequate knowledge, resulting in substandard childcare and feeding practices (Mauludyani & Khomsan, 2022).

Mothers' low nutritional knowledge is closely linked to various risky behaviors that can increase the likelihood of stunting. Lack of knowledge about toddlers' nutritional needs can lead to mothers providing age-inappropriate foods, both in terms of texture, portion size, and nutritional content. Mothers with insufficient knowledge often fail to understand the importance of dietary diversity, leading to monotonous and low-essential nutrient intake for their children (Nurulfuadi et al., 2025). Furthermore, lack of knowledge about the importance of micronutrients such as iron, zinc, vitamin A, and folate can lead to micronutrient deficiencies, which significantly contribute to stunted growth (Isang et al., 2024). Poor maternal knowledge can also hinder good sanitation and hygiene practices, including understanding the dangers of diarrhea, worm infections, consumption of unclean water, and the risk of disease transmission within the household. These conditions indirectly increase the risk of stunting because repeated infections are a major cause of impaired nutrient absorption in children (Kamagi et al., 2020).

Inadequate maternal knowledge is also associated with low levels of psychosocial parenting complexity, particularly in addressing children's feeding responses, developmental stimulation, and routine health monitoring. Mothers with limited knowledge may view growth disorders as commonplace and therefore fail to take immediate action when their children exhibit symptoms of decreased appetite, weight loss, or delayed motor development (Rosalina et al., 2024). On the other hand, mothers with good knowledge are better able to take preventive measures, such as taking their children to integrated health posts (Posyandu), participating in regular growth monitoring programs, or consulting with health workers when they experience symptoms. Adequate knowledge also helps mothers understand the importance of complete immunization, infection prevention, and appropriate disease management, all of which contribute to optimal toddler growth (Bora et al., 2023).

In the context of stunting, maternal knowledge is crucial because it influences a child's entire early life trajectory, including the First 1,000 Days of Life (HPK), the most critical period for physical growth and brain development. Mothers who understand the concept of HPK are more likely to adopt appropriate maternal health behaviors, from preconception through breastfeeding (Anugrahini et al., 2024). Good knowledge allows mothers to ensure adequate nutrition during pregnancy, undergo regular antenatal care (ANC) checkups, take iron and folic acid supplements, and recognize danger signs during pregnancy. Lack of knowledge at this stage can result in the birth of a baby with low birth weight or suboptimal height, which are early risk factors for stunting. After delivery, knowledge about newborn care and adequate breastfeeding is also key to preventing stunting (Suarayasa, 2021).

Besides influencing feeding behavior and child health, maternal knowledge is also closely related to decision-making at the household level. Mothers with limited knowledge may be less able to consider the value of nutritious food choices, especially when family income is limited. In many low-income families, food expenditures tend to be directed towards filling but nutrient-poor foods. Mothers with good nutritional knowledge will still strive to choose nutrient-dense foods even in limited economic circumstances, such as choosing affordable plant-based protein sources, utilizing local vegetables, or preparing food in ways that maintain nutritional quality. Conversely, mothers who lack this understanding may prioritize instant foods, unhealthy snacks, or a less varied household menu (Wati & Ichsan, 2024).

Mothers' knowledge is also inextricably linked to social and cultural factors. In some communities, child feeding patterns are shaped by inherited traditions that do not always align with modern nutritional principles. Mothers with limited knowledge tend to adhere to these beliefs without considering their impact on child development. Conversely, mothers with a strong knowledge base are more critical of inaccurate beliefs and better able to adopt sound nutritional practices based on scientific knowledge (Faramista et al., 2024).

Based on the research results and theories above, researchers assume that maternal knowledge plays a crucial role in stunting prevention because it influences nutritional behavior, food choices, sanitation, health monitoring, and parenting practices throughout a child's life. Various studies have shown that low maternal knowledge is associated with an increased risk of stunting. Health education through integrated health posts (Posyandu), nutrition counseling,

community empowerment, and the media is a strategic step, especially in areas with a high stunting prevalence. Consistent and context-appropriate educational efforts help mothers understand their children's nutritional and health needs, make informed decisions, and implement better parenting practices.

4. Conclusion

There is a relationship between maternal knowledge and the incidence of stunting in toddlers in South Buton Regency with a significance value of 0.000 or a p-value <0.05. Maternal knowledge plays a crucial role in reducing the incidence of stunting, so efforts are needed to increase maternal knowledge through nutrition education, health promotion, and strengthening basic health services to create strategic steps to reduce the incidence of stunting and support the achievement of optimal child growth.

Compliance with ethical standards

Disclosure of Conflict of Interest

There is no conflict of interest in this research.

Statement of ethical approval

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Statement of Informed Consent

As a researcher, I confirm that prospective participants have received complete, clear, and understandable information regarding the research objectives, procedures, potential benefits and risks, data confidentiality provisions, and the right to refuse or discontinue participation at any time without consequence. I ensure that the informed consent process is ethical, voluntary, free from duress, and in accordance with research ethics standards. This ensures that participants have sufficient information to make informed and responsible decisions regarding their participation in this research.

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