



## The Relationship Between Feeding Patterns and Maternal Knowledge about Nutrition with the Incidence of Stunting in Children Age 0-5 Years in the Working Area of the Gedongan Health Center, Mojokerto City

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### Abstract

Stunting is a prolonged state of chronic malnutrition. This disorder is characterized by having a body length-for-age or body height-for-age measurement that falls below the -2 standard deviation established by the World Health Organization (WHO). The etiology of stunting is multifaceted, encompassing factors such as nutrition, feeding practices, infectious illnesses, and household income. Maternal understanding of nutrition, including dietary factors, is also associated with the occurrence of stunting. This study aimed to establish the relationship between feeding habits and maternal knowledge of nutrition with the prevalence of stunting in the operational region of the Gedongan Health Center, located in Mojokerto City. This study is an observational analytical study employing a cross-sectional design. The study's population consisted of all women with children residing in the working area of the Gedongan Health Center. This study encompassed 144 participants who completed the Child Feeding Questionnaire (CFQ) regarding eating practices and a questionnaire assessing maternal knowledge of nutrition. The objective was to examine the relationship between these factors to height and age. The chi-square test results indicate a statistically significant association between feeding practices and stunting ( $p = 0.0001$ ) and maternal knowledge about nutrition and stunting ( $p = 0.0001$ ). The survey revealed that most children had been provided with appropriate feeding patterns, and most moms had a commendable nutritional understanding. The study's findings indicate a noteworthy relationship between feeding behaviors and mothers' nutrition knowledge.

**Keywords:** feeding patterns; maternal knowledge of nutrition; stunting

### INTRODUCTION

As defined by World Health Organization (WHO), stunting is a condition in children characterized by impaired growth and

development due to insufficient nutrition, frequent illnesses, or insufficient psychosocial stimulation. Stunted children are characterized

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by a height that is expected to be more than two standard deviations below the WHO Growth Standard 2006 median. The United Nations Children's Fund (UNICEF) defines stunting as the inability to achieve full development potential due to inadequate nutrition and frequent illness (Gunardi et al., 2021). The WHO reported a global prevalence rate of 22% for stunting in toddlers in 2018 (Candra, 2020). Based on the 2018 Basic Health Research (Riskesdas) statistics, the prevalence of stunting among Indonesian toddlers was 30.8%. The Indonesian Toddler Nutrition Status Survey (SSGBI) has revealed that the prevalence of stunting in Indonesia, particularly in 2019, has declined to 27.67%.

Nevertheless, this score was above the stunting threshold the WHO established. The President of Indonesia has established a goal of achieving a 14% decrease in stunting by 2024 to expedite the process of reducing stunting rates. This information is sourced from the Ministry of Health in 2023 (Ministry of Health, 2023).

Stunting arises from immediate factors such as inadequate nutrient intake, suboptimal feeding practices, limited access to healthcare services, and insufficient provision of environmental sanitation facilities and clean water (Utami et al., 2022; 2023), impacting the nutritional well-being of both mothers and children. Concurrently, indirect determinants encompass the health system, economic inequalities, and familial characteristics. The financial challenges associated with lower socioeconomic status impede securing optimal nutrition (National Planning Development Agency, 2018). In the short term, stunting manifests as disruptions in intelligence, impaired brain development, metabolic disorders, and physical growth anomalies. In the long term, it contributes to diminished cognitive abilities, compromised learning achievements, weakened immunity (Adiwinoto et al., 2024), heightened susceptibility to illnesses, and an elevated risk of chronic conditions such as diabetes, cancer, obesity, stroke, heart disease, and age-related disabilities (Ministry of Rural Development, 2017).

Parents' knowledge concerning proper nutrition and their level of education significantly influence the mindset and prevalence of stunting in toddlers (Mugianti et al., 2018). Maternal understanding of nutrition plays a pivotal role in shaping attitudes and behaviors related to food choices. A robust knowledge base in nutrition

enhances a mother's ability to consistently provide nutritious meals for her children (Alfiana, 2017; Forh et al., 2022). Previous research reveals that 68.3% of respondents lacked adequate knowledge about toddler nutrition, whereas 30.8% showed commendable awareness. Mothers with limited knowledge about toddler nutrition face a 4.8 times higher risk of stunting than those with comprehensive insights (Ali et al., 2017; Murti et al., 2020). Additionally, factors like parents' feeding habits influence children's nutritional status (Aramico et al., 2016; Meshram et al., 2019).

Correct feeding methods are emphasized to ensure appropriate nutrition since food is essential for infant growth (Goudet et al., 2019). The decisive role of nutrition in the growth process is closely tied to intelligence and overall health. Malnutrition poses risks of infection susceptibility, and inadequate dietary fulfillment may disrupt the child's growth trajectory, leading to conditions like malnutrition, thin physique, and potentially stunting. Therefore, a comprehensive approach to addressing nutrient deficiencies should ensure a well-balanced diet (Purwani and Mariyam, 2013; Khan et al., 2019).

The previous section emphasizes the complex and diverse elements that contribute to the occurrence of stunting in children. While recognizing the significance of feeding practices and the mother's nutritional expertise, it is essential to specify the distinctive elements that set this research apart from previous studies. This study differs from past studies in that it examines the existence or nonexistence of a relationship and explores the underlying endeavors to improve maternal knowledge. This research goes beyond analyzing dietary patterns and parental nutritional expertise to investigate strategies that can enhance maternal understanding and effectively address the high occurrence of stunting. The main objective of this study is to examine the relationship between feeding patterns and mother knowledge. Additionally, it aims to actively contribute to increasing maternal awareness, distinguishing it from previous studies on this subject.

## **MATERIALS AND METHOD**

### **Research design**

This study employed a quantitative approach through a cross-sectional survey. The choice of

this strategy aligns with the study’s objectives, which aim to establish the correlation between feeding practices, maternal knowledge of nutrition, and the occurrence of stunting. Additionally, the data analysis included statistical tests such as chi-square and correlation analyses to examine the relationship between variables and determine significance.

**Population and sample**

The data collection occurred in the operational zone of the Gedongan Health Center, located in Mojokerto City, in August 2023. The purposive sampling technique was employed, tailored to meet the specific requirements of the research. The inclusion criteria encompassed women with children aged 0 to 5 years residing in the operational area, while the exclusion criteria excluded those unwilling to complete the questionnaire or not meeting the specified age range. A total of 144 participants met these criteria and provided informed consent for participation, ensuring voluntary involvement and adherence to ethical standards regarding data confidentiality.

**Measurement**

The assessment of feeding patterns in this research employed the Child Feeding Questionnaire (CFQ) developed by Prakhasita (2019). Maternal knowledge of nutrition was gauged using the 2021 Zega questionnaire. Height measurements for children were obtained using Microtaise, a precise measuring instrument, while weight measurements were utilized on a digital baby scale with accuracy to the nearest gram. Subsequently, height and weight measurements were correlated with z scores, per the standards outlined by the WHO, with a z score value below -2 SD indicating stunting. The CFQ utilizes an ordinal scale, attributing scores as follows: very often (4), frequent (3), rarely (2), and never (1), with a total of 15 questions. Each question is scored from 1 to 4. Post-questionnaire

completion, the percentage is calculated, and the feeding pattern is categorized as inappropriate (< 55%) or appropriate (55 to 100%).

The maternal knowledge questionnaire on nutrition comprises 21 questions, with correct responses earning a score of 1 and incorrect responses receiving a score of 0. The assessment is categorized as follows: good (76 to 100%), sufficient (56 to 75%), and less (< 55%). Statistical analysis was conducted using IBM SPSS version 21, employing chi-square and correlation analysis to determine the relationship between variables and significance levels. The study received a research ethical feasibility statement from the Health Research Ethics Commission of the Faculty of Medicine, Universitas Hang Tuah, with letter number I/148/UHT.KEPK.03/X/2023.

**RESULTS AND DISCUSSION**

The findings of this study gathered information from a total of 144 mother participants who had toddlers; 78 (54.2%) of the toddlers were boys. Most respondents, precisely 95 (66%) of the mothers, had a high school education as their highest degree of schooling.

One hundred thirty children exhibit no signs of stunting and adhere to a proper dietary regimen. Out of the total of 14 children who are experiencing stunting, 9 of them are receiving an inadequate diet, whereas 5 children are receiving a suitable diet (Table 1). The chi-square test analysis with a *p*-value of 0.0001 indicates that the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. It implies a significant association between feeding patterns and the incidence of stunting in children aged 0 to 5 years in the working area of the Gedongan Health Center.

Certain respondents exhibit inaccuracies in providing nutrition for their children, occasionally offering solely vegetables, tofu, and tempeh or

Table 1. Cross tabulation between feeding patterns and the incidence of stunting

Feeding patterns	Stunting					
	No		Yes		Total	
	n	Percentage (%)	n	Percentage (%)	n	Percentage (%)
Appropriate	130	90.3	5	3.5	135	93.8
Inappropriate	0	0.0	9	6.3	9	6.3
Total	130	90.3	14	9.8	144	100.0
Chi-square test	<i>p</i> = 0.0001					

providing chicken and rice without accompanying vegetables. Moreover, deviations in the frequency and quantity of the meals provided to children, not aligning with their respective ages, result in suboptimal nutritional intake. It is imperative to adhere to proper feeding patterns, considering food type, quantity, and meal schedules to ensure adequate nutrition.

The nutritional status of children is intricately linked to the type of food they consume, particularly given the nutritional vulnerability of toddlers. Consequently, the dietary choices must align with the child's physiological and digestive capacities. Emphasizing a diverse diet with sufficient dietary value is paramount in averting malnutrition, as Mouliza and Darmawi (2022) underscored.

The adequacy of nutrition significantly influences the comprehensive development and growth of children. The nutrients consumed play a pivotal role in shaping the nutritional status of children, with varying impacts on individual developmental trajectories. Rosidah and Harsiwi (2017) and Khadija et al. (2022) proposed that disparities in nutritional status can affect children's growth and development. Failing to meet balanced nutritional requirements adequately may impede children's optimal growth and development.

The study conducted by Sari et al. (2022) at the Sedau Health Center revealed that the primary factors contributing to stunting in the region were inadequate child-feeding practices and insufficient mother awareness. This dietary pattern is associated with an imbalanced selection of food and insufficient food consumption that does not meet the child's nutritional requirements. The child's diet significantly influences their growth by providing essential nutrients. Nutrition exerts an impact on both physical well-being and cognitive abilities. Inaccurate eating habits might disrupt a child's growth process, leading to

underweight, stunted growth, or even malnutrition (Khadija et al., 2022).

Adequate nutrient intake is a fundamental pillar in supporting children's comprehensive growth and development, encompassing physical, psychological, and motor dimensions. The optimal consumption of nutrients indicates favorable conditions for future growth and development. The dietary choices of children under five are intricately linked to their overall health. How children are fed significantly influences their nutrient intake, and deviations from proper feeding patterns can lead to insufficient nutrient consumption, even when food ingredients are readily available. Therefore, mothers must conscientiously attend to their children's feeding patterns, employing creative and diverse approaches to ensure the fulfillment of nutritional requirements (Loya and Nuryanto, 2017).

Table 2 presents the outcomes of the crosstabulations test examining maternal knowledge about nutrition with the occurrence of stunting. Notably, most non-stunted children, amounting to 129, have mothers with commendable nutritional understanding. One non-stunted child is also associated with a mother possessing sufficient nutritional knowledge. Conversely, among stunted children, 4 have mothers with sufficient knowledge, and 10 have mothers with robust nutritional knowledge.

Regarding the distribution of respondents based on maternal education characteristics, the most prevalent education level identified in this study was high school. Rukmana et al. (2016) observed that more education increases the chances of securing improved work, influencing the family's income and availability of food. This result is consistent with the study findings of Laksono et al. (2022). They found that mothers with primary and junior high school education have 1.59 and 1.43 times higher odds,

Table 2. Crosstabulation between the mother's knowledge of nutrition and the incidence of stunting

Mother knowledge	Stunting					
	No		Yes		Total	
	n	Percentage (%)	n	Percentage (%)	n	Percentage (%)
Enough	1	0.7	4	2.8	5	3.5
Good	129	89.6	10	6.9	139	96.5
Total	130	90.3	14	9.7	144	100.0
Chi-square test	$p = 0.0001$					

respectively, of having stunted children under two years compared to college-educated mothers. Additionally, Senior High School-educated mothers have 1.23 times higher odds. This observation highlights the connection between a mother's knowledge and her level of education. It emphasizes that mothers with higher education, especially those with higher education qualifications, are likelier to have advanced knowledge. It is because they have been exposed to research methodology during their education, which helps them better understand and handle information.

Maternal nutritional knowledge, encompassing nutrition, significantly influences children's growth. Mothers' comprehension of toddler nutrition holds a crucial role in the intricate process of child growth and development. As primary caregivers, mothers wield substantial influence over proper childcare practices and establishing well-balanced nutritional intake patterns. Demonstrating good parental knowledge regarding nutrition emerges as a key factor in enhancing children's nutritional status (Murti et al., 2020).

The minimal knowledge mothers include awareness of diverse food types catering to optimal nutritional needs during pregnancy and postpartum. Furthermore, providing age-appropriate nutrition ensures the child's steady and optimal growth and development, as highlighted by Puspasari and Andriani (2017).

The chi-square test results, with a  $p$ -value of 0.0001 ( $p < 0.05$ ), reveal a noteworthy correlation between maternal nutritional knowledge and the incidence of stunting. This correlation is consistent with Fadlah and Saharuddin (2023) research findings, where a  $p$ -value of 0.004 ( $p < 0.05$ ) underscores a distinct link between maternal knowledge levels and the prevalence of stunting in toddlers from Caturharjo Village, Sleman Regency.

Several factors influence maternal knowledge, including age, education, and information sources. Age positively correlates with experience, and increased expertise contributes to heightened knowledge. Maternal education is intricately connected to nutritional knowledge, as higher educational attainment is associated with a broader knowledge base. Research by Siregar (2015) affirms this relationship, emphasizing that education significantly

influences knowledge, with higher education levels correlating with enhanced nutritional awareness. The acquisition of information during the education period contributes to this effect. Moreover, the source of information is a critical determinant of maternal knowledge, with reliable sources, including other individuals' experiences and various mass media such as newspapers, books, posters, and electronic media like television, phones, and radio, playing a crucial role in shaping maternal understanding.

The study recognizes several limitations, including its narrow emphasis on a particular population and the possibility of recall bias due to self-reported data. However, its importance lies in elucidating the complex connection between a mother's understanding of nutrition and the occurrence of stunted growth in toddlers. The chi-square test has demonstrated a statistically significant connection, highlighting the crucial influence of mother knowledge on infant nutritional outcomes. This observation can guide specific interventions, acknowledging that education and information sources are essential to shaping mother comprehension. Despite these limitations, the study's importance is underscored by its contribution to comprehending factors affecting child growth. The identified correlation emphasizes the need for strategic interventions, particularly educational programs, to empower mothers with essential knowledge for fostering optimal child nutrition. By addressing these limitations and building on the findings, this research offers a foundation for more effective public health strategies, aiming to enhance child nutritional outcomes and ultimately improve the overall well-being of children.

## CONCLUSIONS

The predominant attributes of the participants in the operational area of the Gedongan Health Center consist of women with secondary school degrees and a majority of male children. There is a significant relationship between the child's feeding pattern, the nutritional knowledge of their mothers, and the occurrence of stunting. In general, children are adequately fed, and their moms understand nutrition well. The study highlights the crucial connection between maternal nutrition knowledge and child stunting, underlining the necessity for focused

interventions. Additional investigation into different demographic variables is necessary, emphasizing providing mothers with nutrition education for the best possible growth of infants.

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