



## The Relationship Between Feeding Patterns and Stunting Incidence in Toddlers from the Perspective of Maqashid Shariah

Weni Saputri<sup>1</sup>, Irwansyah<sup>1</sup>

<sup>1</sup>Fakultas Kesehatan Masyarakat, Universitas Islam Negeri Sumatera Utara

\*Corresponding Author: Weni Saputri

Email: [Wenisaputri852@gmail.com](mailto:Wenisaputri852@gmail.com)



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### Abstract

Stunting is a condition where a person's height is shorter than the height of other people in general. Stunting is a condition of failure to thrive in children under five as a result of chronic malnutrition so that the child is too short for his age. Factors that cause stunting include food intake, infectious diseases, parenting patterns, health services and environmental sanitation, economic, socio-cultural, educational and environmental factors. The research aims to determine the relationship between feeding patterns and the incidence of stunting among toddlers in the Working Area of the Terjun Community Health Center, Medan Marelan District. The research was carried out from March to August 2024 in the Working Area of the Terjun Community Health Center, Medan Marelan District using a cross sectional approach. The research sample was 100 respondents, taken using purposive sampling technique. The research results showed that 35.0% of toddlers were in the stunting category and 65.0% of toddlers were in the non-stunting category. The feeding pattern of toddlers is 54.0% of toddlers with inappropriate feeding patterns and 46.0% of toddlers with appropriate feeding patterns. The results of the chi-square test analysis of this research showed that there was a significant relationship between feeding patterns and the incidence of stunting in toddlers in the Working Area of the Terjun Community Health Center, Medan Marelan District with a significance value of  $p=0.009$  ( $p<0.05$ ), from the results of the analysis it was obtained also  $OR=6.756$ .

## Introduction

According to the World Health Organization (WHO), stunting is a condition where toddlers have a length or height that is below the standard for their age. This condition is measured by a length or height that falls more than two standard deviations below the median of the child growth standard (Karlsson et al., 2022; Sandler, 2021; Pujiati et al., 2021; Marlani et al., 2021). Stunting in toddlers is a global nutritional issue, particularly in developing and low- to middle-income countries (Ssentongo et al., 2021; Victora et al., 2021; Soliman et al., 2024).

The causes of stunting in toddlers include social and economic conditions, maternal nutrition during pregnancy, and inadequate nutrition for infants over a prolonged period (Dermawan et al., 2022; Kirana et al., 2022; Hizriyani, 2021). These factors are interconnected, but the primary cause is long-term inadequate intake of energy and protein, starting from pregnancy until the child reaches two years old (Sari & Marpaung, 2024; Latifah, 2024). According to WHO, stunting is most prevalent in Asia (52% of global cases) and Africa (43%). WHO emphasizes that intensified efforts are needed to meet the global target of reducing stunting to 89 million children by 2030.

Nationally, stunting prevalence in Indonesia decreased from 24.4% in 2021 (Nutrition Status Survey, 2021) to 21.6% in 2022 (Nutrition Status Survey, 2022). Despite this progress, further

improvements are necessary, as the 2022 target was 18.4%, with a goal of 14% by 2024. The Ministry of Health reported a decline from 24.4% in 2021 to 21.6% in 2022, a decrease of 2.8 points. However, to reach the target of 14% by 2024, consistent annual reductions of 3.8 points are required. In 2023, the target stunting rate is 17.8%. Despite these efforts, malnutrition remains a serious issue. According to SSGI data from 2022, 17.1% of children are underweight, 7.7% suffer from wasting, and 3.5% are overweight (Permas & Iskandar, 2024; Nenobais & Widayati, 2025).

Feeding patterns play a significant role in stunting prevention. Proper feeding practices are crucial for toddler growth, as nutrition is directly linked to health and intelligence (Ames et al., 2023; Lutter et al., 2021; Omachi et al., 2022). Malnutrition makes children more susceptible to infections. Poor feeding patterns lead to growth problems, malnutrition, and stunting. Therefore, balanced and nutritious feeding practices are essential to prevent nutrient deficiencies (Salsavira et al., 2025; Susanto et al., 2024; Febriyanti et al., 2021; Santander Ballestín et al., 2021). The Qur'an emphasizes the importance of healthy eating by avoiding excess, meeting nutritional needs, and consuming halal foods prescribed by Islam for a healthy and quality life. Islamic guidelines highlight that food must be *halalan tayyiban* (lawful and good) (Rachmatika, 2024; Hafna et al., 2024). Halal food is permissible according to the Qur'an and Hadith, while *tayyiban* refers to food that is beneficial, nutritious, and ethically sourced (Mufih, 2024).

Human survival depends on food, but dietary habits must be regulated. A healthy diet requires nutritious choices while avoiding excess. In *Maqashid Shariah*, feeding patterns and stunting relate to *Hifzh al-Nafs* (preservation of life). In environments prone to health risks, a conscious effort to maintain healthy living is vital, as good health depends on balanced eating and drinking. Health is one of the greatest blessings from Allah, and it is essential to protect it by preventing harm (Goje & Samarh, 2021; Saeed et al., 2023). Allah grants the gift of sustenance, emphasizing the fulfillment of basic needs to preserve life (*Al-Nafs*). Islam mandates consuming food and drink to sustain life, ensuring a quality existence as guided by *Shariah*. Observing *Hifzh al-Nafs* inspires Muslims to meet basic needs and ensure the survival of others. The overarching goal of *Maqashid Shariah* is to encourage proactive health maintenance. This study highlights the vital role of Islam in maintaining health balance, prompting an exploration of how *Maqashid Shariah* can be applied in public health preservation.

## Methods

A cross-sectional study design formed the foundation of this study as it executed quantitative research. This research design identifies how feeding patterns affect stunting prevalence measurements in toddlers during one point in time. Cross-sectional research is powerful for discovering correlations between influencing factors and final results because it does not modify the variables under investigation. The study depicts the current state of conditions among the chosen research population throughout the observation period.

## Study Location and Duration

The investigators studied the working territory of Puskesmas Terjun Community Health Center situated in Medan Marelan District within North Sumatra Province of Indonesia. The research site was chosen because of its reachable population density together with its area-related importance as well as the documented findings of stunting incidence in this area. Data collection extended through six months from March until August 2024 which offered sufficient time to both gather and verify information accurately.

## Population and Sampling

Healthcare mothers determined the target group of this research since they had children between 6 to 59 months from Puskesmas Terjun's service zone. Health center records showed that 1,422 toddlers fulfilling study criteria comprised the total population due to their age range and growth monitoring data availability.

To choose suitable participants for study participation the investigators conducted purposive sampling according to established inclusion criteria. The researcher chose this non-random sampling technique to focus on adults who directly fed toddlers since they possessed essential knowledge regarding the study purposes. Slovin's formula generated the initial required sample size of respondents which culminated in 100 participants. The researchers established this sufficient number of participants to conduct statistics and represent their findings in the local population.

## Instruments and Variables

The researchers created a structured questionnaire to serve as the data collection instrument in this research. Field experts validated the questionnaire while researchers tested it through pre-testing to establish its clarity and significance in the examination process. The tool included three main sections: Sociodemographic details about participants along with their maternal educational attainment and toddler age, Feeding habits measurements including how often the toddler consumed food and dietary diversity and feeding time consistency, and Nutritional status evaluation of children from both health record data and maternal reports.

The evaluation of feeding patterns into proper or improper categories followed a score system derived from national guidelines which measured meal frequency and food variety together with feeding schedule consistency. The research used height-for-age Z-scores (HAZ) based on WHO growth standards to establish the nutritional status of toddlers particularly when examining stunting. The measurement revealed children with results under minus two standard deviations from the median to be stunted.

## Data Analysis

The researchers analyzed data with the help of SPSS (Statistical Package for the Social Sciences) version 25 for coding purposes. Statistical data analysis consisted of describing through frequency tables the data regarding participant demographics alongside child feeding methods and measures of child growth shortness. Analysts performed a chi-square ( $\chi^2$ ) test to analyze the relationship between feeding patterns and stunting. The chi-square analysis was utilized to check whether toddlers with proper feeding showed different stunting distribution patterns compared to those with improper feeding habits.

The study considered values of p less than 0.05 as evidence of statistically significant results. The research computed an Odds Ratio (OR) to quantify how closely improper feeding methods relate to a child developing signs of stunting. A value above 1 in the Odds Ratio test indicated that wrong food handling approaches raise the chances of children becoming stunted.

## Results and Discussion

### Feeding Patterns

Table 1. Frequency Distribution of Feeding Patterns and Stunting Incidence in Toddlers

| Feeding Patterns | Frequency (n) | Percentage (%) |
|------------------|---------------|----------------|
| Improper         | 54            | 54.0           |

|              |            |              |
|--------------|------------|--------------|
| Proper       | 46         | 46.0         |
| <b>Total</b> | <b>100</b> | <b>100.0</b> |

Based on Table 1, the results show that 54 respondents (54.0%) had improper feeding patterns, while 46 respondents (46.0%) had proper feeding patterns. In this study, mothers with improper feeding patterns demonstrated issues with the type of food and feeding schedules. The inappropriate food types were indicated by toddlers not finishing their meals and not consuming fruit daily. Additionally, irregular feeding schedules included not feeding toddlers three times a day, failing to eat on time, and lacking a structured feeding schedule. Mothers must learn to provide nutritious meals at home, ensuring variety and appropriate portion sizes to meet the family's nutritional needs.

### Nutritional Status of Toddlers

Table 2. Nutritional Status Characteristics of Toddlers

| Nutritional Status | Frequency (n) | Percentage (%) |
|--------------------|---------------|----------------|
| Stunting           | 35            | 35.0           |
| Not Stunting       | 65            | 65.0           |
| <b>Total</b>       | <b>100</b>    | <b>100.0</b>   |

Table 2 reveals that 35 respondents (35.0%) were categorized as stunted, while 65 respondents (65.0%) were not. Stunting in this research is associated with improper feeding patterns, leading to insufficient nutrient intake. Feeding patterns significantly influence stunting. If mothers and caregivers provide meals with adequate quality and quantity, children are more likely to achieve optimal nutrition, which supports normal growth and cognitive development (Fazrin et al., 2022; Abbas & Karim, 2023; Lutter et al., 2021).

### Age Distribution of Toddlers

Table 4. Distribution of Respondents by Age of Toddlers

| Age Group (months) | Frequency (n) | Percentage (%) |
|--------------------|---------------|----------------|
| 6–12               | 18            | 18.0%          |
| 13–24              | 28            | 28.0%          |
| 25–36              | 31            | 31.0%          |
| 37–59              | 23            | 23.0%          |
| <b>Total</b>       | <b>100</b>    | <b>100.0%</b>  |

Among the studied toddlers, those within the 25–36 month age bracket made up 31.0% of the total population while the 13–24 month group comprised the remaining 28.0%. This period requires children to consume nutrient-rich foods and requires them to feed at regular times. Multiples hours of nutritional deficit in this essential developmental phase result in major growth abnormalities and significantly elevate the chance of stunting.

### Maternal Education Level

Table 5. Maternal Education Level

| Education Level     | Frequency (n) | Percentage (%) |
|---------------------|---------------|----------------|
| No formal education | 6             | 6.0%           |
| Primary School      | 18            | 18.0%          |
| Junior High School  | 26            | 26.0%          |
| Senior High School  | 33            | 33.0%          |
| College/University  | 17            | 17.0%          |

|              |            |               |
|--------------|------------|---------------|
| <b>Total</b> | <b>100</b> | <b>100.0%</b> |
|--------------|------------|---------------|

The study participants showed a highest percentage of completion (33.0%) in senior high school education even though 6.0% had no formal education. Mothers need proper education to learn and execute correct nutritional practices. Lack of formal education usually prevents mothers from obtaining the necessary health information and understanding it properly for their own benefit.

### Relationship Between Maternal Education and Feeding Patterns

Table 6. Relationship Between Maternal Education and Feeding Pattern

| Education Level     | Improper Feeding Pattern | Proper Feeding Pattern | Total (n)  |
|---------------------|--------------------------|------------------------|------------|
| No formal education | 5                        | 1                      | 6          |
| Primary School      | 14                       | 4                      | 18         |
| Junior High School  | 18                       | 8                      | 26         |
| Senior High School  | 13                       | 20                     | 33         |
| College/University  | 4                        | 13                     | 17         |
| <b>Total</b>        | <b>54</b>                | <b>46</b>              | <b>100</b> |

The analysis reveals a specific distribution in the results data. Mother who did not finish school demonstrated higher rates of feeding their children through inappropriate methods. This data reveals that mothers who did not complete any education displayed poor feeding practices in five out of six cases whereas this behavior was detected in four out of seventeen mothers who finished more school. The data indicates that maternal education strongly influences a mother's capacity to feed their toddlers appropriate structured nutrition.

### Relationship Between Feeding Patterns and Stunting Incidence

Table 3. Analysis of the Relationship Between Feeding Patterns and Stunting Incidence in Toddlers

| Feeding Patterns | Stunting Incidence |             |              |             | Total      |              | p-value | OR    |
|------------------|--------------------|-------------|--------------|-------------|------------|--------------|---------|-------|
|                  | Stunting           |             | Not stunting |             |            |              |         |       |
|                  | n                  | %           | n            | %           | N          | %            |         |       |
| Improper         | 25                 | 46,3        | 29           | 53,7        | 54         | 100,0        |         |       |
| Proper           | 10                 | 21,7        | 36           | 78,3        | 46         | 100,0        | 0,009   | 6,756 |
| <b>Total</b>     | <b>35</b>          | <b>35,0</b> | <b>65</b>    | <b>65,0</b> | <b>100</b> | <b>100,0</b> |         |       |

Table 3 shows that 25 out of 54 respondents (46.3%) with improper feeding patterns experienced stunting, compared to 10 out of 46 respondents (21.7%) with proper feeding patterns. The chi-square test indicates a significant relationship between feeding patterns and stunting incidence ( $p = 0.009$ ,  $p < 0.05$ ). The odds ratio (OR) of 6.756 implies that improper feeding patterns increase the likelihood of stunting by 6.756 times compared to proper feeding patterns.

### Relationship Between Feeding Patterns and Stunting Incidence

Maqashid sharia is closely related to diet and stunting, namely the protection of Preserving the Soul (Hifdz al-Nafs). Maintaining the Soul Hifdz al-Nafs is an effort to maintain the soul and the continuation of human life, Islam requires to achieve the establishment of the soul, namely the fulfillment of basic food. One of the maintenance of the soul is eating. Eating is very important by the body and for human life, so eating is also an obligatory need.

Ibn Ashur defines maqashid al-shariah in his book al-Muwafaqat and examines it specifically within the field of usul fiqh, recommending that the concept of maqashid al-shariah be established as an independent discipline to serve as a firm foundational framework (qath'i) for legal principles. According to the Qur'an, there are verses discussing harm (mudharat) that bring about benefits for humanity. In this context, maslahah (benefit) refers to actions that may involve harm or prohibitions imposed by Allah. This highlights the importance of the connection between maqashid al-shariah and Hifdz al-Nafs (the preservation of life). Ibn Ashur states that maqashid al-shariah represents a condition desired by shari'ah to ensure human welfare or to safeguard life (Hifdz al-Nafs).

Based on the level of importance, Maqashid Shariah is divided into three levels: Daruriyat, Hajiyat, and Tahsiniyat. Preserving the soul, also known as Hifdz al-Nafs is one of the five pillars of sharia. It includes the protection and maintenance of everyone's way of life and health. Hifdz al-Nafs (preserving the soul) includes all the basic needs needed to sustain life, this is seen in the provisions of Allah SWT to fulfill basic human rights. Efforts to maintain the soul and the continuation of human life, Islam requires to achieve the establishment of the soul, namely the fulfillment of basic food. One of the maintenance of the soul is eating. Eating is very important by the body and for human life, so eating is also an obligatory need. Therefore, Hifdz al-Nafs is included in the primary level (daruriyat). Daruriyat is a primary need that is essential for human life and something that must exist for human existence or in other words, human life is not perfect without having to fulfill it as a feature or completeness of human life. At the level of daruriyat, such as fulfilling basic needs in the form of food and drink under normal conditions and when dharurat (forced), it is obligatory to eat anything in order to survive, even if what is available at that time is something that is forbidden in its origin. If this basic need is ignored, the existence of the human soul will be threatened.

The implementation of Maqashid Sharia, namely Hifdz al-Nafs, can be applied with a lack of nutritional intake during pregnancy and lack of access to nutritious food, lack of access to sanitation and clean water which can cause stunting at the dharuriyat level in fulfilling basic needs. Ibn Ashur analyzes the existence of benefit in every enactment of Islamic law in the Qur'an by looking at the mention of the nature of the Qur'an as the best guidance, and Islamic law that comes for the benefit of humans in this world and in the hereafter. For example, fulfilling the basic needs in the form of food to sustain life is aimed at preserving the soul (Hifdz al-Nafs).

There are several factors that cause stunting, including chronic nutritional problems from the beginning of pregnancy to childbirth, this happens because of the mother's lack of knowledge and poor parenting methods as stated in Maqashid Sharia to maintain the soul at the daruriyat level such as meeting basic needs in the form of food to sustain life. If this need is not met, it will result in the endangerment of the human soul. Because for the maintenance and development of the soul can be done by fulfilling its main needs. The needs in question are not only to ensure the continuity of the soul and well-being, but can perform its role as khalifah effectively.

### **Feeding Practices and Nutritional Outcomes**

This research produces strong findings which demonstrate how nutritional status of toddlers markedly responds to their feeding habits. The improper way of feeding which includes limited meals together with restricted nutritional diversity and irregular feeding times upsets child growth status significantly. Past research supports the conclusions that inadequate feeding practices during early childhood periods cause a persistent nutrient shortage which affects both physical growth and brain development and immune system maturation (Lutter et al., 2021;

Ames et al., 2023; Morales et al., 2023; Bustamante-Sanchez et al., 2022). The development of stunting emerges from prolonged nutritional deficiencies which establish during fetal growth followed by the first 24 months of childhood.

The research data confirms worldwide public health knowledge which shows that stunting develops as both a biological product from nutrition deficiencies and a behavior outcome through routine child care activities. Children who received improper feeding according to this study experienced irregular eating patterns while missing diverse food groups and valuable protein sources which consisted of fruits and animal proteins (Nsele, 2014; Abubakar, 2024; Mbaabu, 2021). The need for elevated energy and protein requirements among infants and toddlers outweighs needs at any other period in human life (Victora et al., 2021; Butte, 2005). Failure to deliver adequate nourishment regularly leads children toward unavoidable stunting in their physical development.

Most communities adopt nutrition practices through the combination of age-old customs and minimal nutritional awareness and restricted economic possibilities. Food availability does not necessarily stand as the main problem but mothers struggle to receive specific instructions on nutritional balance and need better education about essential micronutrients including iron and calcium and vitamin A. The World Health Organization has established that kids need to eat three meals daily which must include four distinct food categories to fulfill their nutritional requirements (World Health Organization, 2021; Samosir et al., 2023). Most stunted toddlers in this research group did not achieve the minimum feeding frequency while failing to meet nutritional requirements that resulted from both dietary measurements.

These results demonstrate that getting proper education about nutrition plays an essential role in promoting child development. The nutritional results of food depend on both selection and when combined with food administration methods. The accumulation of food-related complications occurs because of late food introduction along with excessive reliance on bland carbohydrate staples like porridge. The elimination of child stunting demands mandatory education about proper feeding techniques and dietary quality for meals. The distribution of this essential information remains limited in Medan Marelan since formal and community-based channels do not effectively spread it.

### **Maternal Education and Behavioral Influence**

The study demonstrates that better-educated mothers tend to display different food-related practices compared to others. Practices of improper child feeding became more common among mothers who received limited education extending only to primary school or no education at all. The relationship between these variables exists as a commonly known fact across national and international scholarly research. The educational background of mothers enables them to comprehend health information and make informed dietary choices as well as adopt preventive health behaviors (Abbas & Karim, 2023; Febriyanti et al., 2023; Sun et al., 2022; Jhaveri et al., 2023). Courses of study less than higher education expose individuals to fewer child nutrition guidelines along with improper feeding schedules and unsatisfactory food preparation hygiene practices.

The opposing child-feeding methods of mothers at different education levels prove that literacy requires abilities beyond written skills because it enables knowledge comprehension which leads to health-related actions. The education level of mothers affects their reception toward hospital health guidance during antenatal and postnatal consultations as well as their attendance at child growth monitoring and ease in asking questions about parenting practices (Fareleira et al., 2023; World Health Organization, & United Nations Children's Fund, 2023). The combined

efforts sustain a positive parenting environment which decreases the chances of child growth stunting.

Mothers with higher education possess better ability to challenge cultural customs that oppose dietary recommendations because of their improved empowerment. Certain cultural beliefs about animal protein consumption and the timing of solid food introduction result in developmental harms to children during sensitive periods. Women who completed higher levels of education tend to show self-confidence while maintaining authority over their decision-making regarding scientific feeding practices (Kawarazuka et al., 2023; Alfian et al., 2025). The insufficient educational background leads some parents to follow potentially dangerous feeding customs because they respect their elders and want to avoid communal rejection.

Better maternal education stands as a crucial strategic measure to defeat child stunting. Long-term educational expansion continues to progress yet functional health education requires immediate attention because it enables mothers from all educational levels to acquire practical eating choices. Community members who include health workers along with religious leaders and local women's groups serve well as educational channels which supply easily understandable nutritional information to their communities. The grassroots initiatives successfully connect people to vital knowledge which leads to better home care practices in zones where formal education remains restricted.

## Conclusion

Based on the results of research conducted on the relationship between feeding patterns and the incidence of stunting in toddlers in the Terjun Health Center Work Area, Medan Marelan District, the results showed that 35.0% of toddlers with stunting categories and 65.0% of toddlers with non-stunting categories. Feeding patterns of toddlers are 54.0% of toddlers with improper feeding patterns and 46.0% of toddlers with proper feeding patterns. In maqashid sharia, diet is included in the protection of maintaining the soul (Hifdz al-Nafs). Maqashid sharia Hifdz al-Nafs is an effort to preserve the soul and the continuation of human life, Islam requires to achieve the establishment of the soul, namely the fulfillment of basic food. One of the maintenance of the soul is eating. Eating is very important for the body and for human life, so eating is also an obligatory need. The results of the chi-square test analysis of this study found that there was a significant relationship between feeding patterns and the incidence of stunting in toddlers in the Terjun Health Center Working Area, Medan Marelan District with a significance value of  $p = 0.009$  ( $p < 0.05$ ), from the results of the analysis also obtained  $OR = 6.756$ .

For the Community, it is recommended to provide balanced and nutritious food for toddlers and to actively participate in posyandu (integrated health service posts) or health services that offer education on the importance of proper and balanced feeding for young children. Researchers suggest that the community should regularly monitor children's growth by bringing them to posyandu or public health centers (puskesmas) for weight and height measurements. For Health Workers, it is advised to be more proactive in providing nutrition education and counseling to parents, particularly regarding the significance of balanced and nutritious feeding for toddlers. Health workers are also encouraged to conduct regular growth monitoring at posyandu or public health centers. Those working in areas with a high prevalence of stunting should undergo continuous training on nutrition and appropriate feeding patterns for young children. For Future Researchers, it is recommended to conduct further studies using larger samples and longer durations to strengthen the evidence regarding the relationship between feeding patterns and stunting in toddlers.

This study also highlights the need for Islamic integration, particularly the concept of Maqashid Shariah, to enhance the understanding and application of principles at Puskesmas Terjun in Medan Marelan Subdistrict. The proposed suggestions include integrating Islamic teachings on feeding patterns, healthy eating practices, and safeguarding offspring. A comprehensive approach to studying feeding behavior, incorporating both physical and spiritual dimensions in accordance with Islamic teachings, is encouraged to provide appropriate and balanced feeding patterns.

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