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The relationship between feeding patterns and the nutritional status of preschool children

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Abstract

Background: Feeding patterns are a critical factor influencing a child's growth, development, and nutritional status. Inappropriate feeding practices can contribute to nutritional problems such as wasting, stunting, overweight, and micronutrient deficiencies. UNICEF data (2022) shows that two in five children under five do not receive the recommended dietary diversity, and only around 40% receive an optimal diet.

Purpose: to determine the relationship between feeding patterns and the nutritional status of pre-school children aged 3-5 years.

Method: The study employed a quantitative design with an analytical study and a cross-sectional approach. The population was 4.041 toddlers in the Banda Sakti Community Health Center working area, with a sample of 107 respondents selected using accidental sampling. Data collection was conducted using primary and secondary data, then analyzed using the Chi-Square test. The study was conducted from July to August 2025.

Results: The results of the analysis showed a p-value of 0.000 (<0.05), so there is a significant relationship between feeding patterns and the nutritional status of preschool children aged 3–5 years.

Conclusion: Good feeding patterns are associated with optimal nutritional status in preschool children. Therefore, it is necessary to increase parental awareness, especially mothers, regarding the importance of implementing appropriate feeding patterns to prevent nutritional problems in children.

Keywords: Feeding Patterns; Nutritional Status; Preschool Children.

INTRODUCTION

Nutritional status is a key factor in achieving optimal health, as good nutrition is essential for normal growth, development, and bodily function (Paramastuti, Rachma, & Kamil, 2025). However, many nutrition-related health problems persist in the community, ranging from undernutrition and micronutrient deficiencies to overnutrition and obesity, which increase the risk of non-communicable diseases and reduce quality of life (Kobylińska, Antosik, Decyk, & Kurowska, 2022). A person will have good nutritional status if their nutritional intake, including energy, macronutrients, and micronutrients, meets the body's needs and is supported by adequate health (especially freedom from infection) (Paramastuti et al., 2025).

Nutritional status is also crucial for children's growth and development, particularly during the preschool years, a critical period that determines their future quality of life. Children who receive adequate and balanced nutrition according to their needs will grow up with healthy physiques, optimal brain development, good cognitive abilities, and stronger immune systems, enabling them to learn and adapt better to their environment (Pinto, Ximenes, Jesus, Leite, & Noronha, 2023). Conversely, malnutrition in children can lead to growth disorders such as stunting, impaired organ and functional development, decreased intelligence and learning ability, and increased susceptibility to infections and other health problems into adulthood (Fesmia, Putri, Suryantini, & Nurhidayati, 2023).

According to the 2021 edition of the UNICEF-WHO-World Bank Joint Malnutrition Estimates, an estimated 148.2 million children under five worldwide were stunted, 45.4 million were wasted, and 38.9 million were overweight in 2020–2021 (Anwar, Asih, & Lara, 2023). Globally, the prevalence of stunting in children under 5 years of age declined from approximately 32.6% to 22.2% between 2000–2017, with the number of stunted children dropping from 198 million to 151 million, although this figure remains above the WHO threshold of 20% for public health problems (Kurnia & Ismarwati, 2023). Specifically, UNICEF/WHO and the World Bank estimate that approximately 151 million children under five (22.2% of the world's children) are still stunted, with more than half of these cases occurring in Asia. In Indonesia, the 2018 Basic Health Research data showed that the prevalence of stunting in toddlers was 30.8%, down from around 37.2% in previous years, but still categorized as high and placing Indonesia as one of the countries with the largest stunting burden in the world (Suratri, Putro, Rachmat, Nurhayati, Ristrini, Pracooyo, & Raharni, 2023).

In Indonesia, the 2018 Basic Health Research data showed a prevalence of stunting in toddlers of 30.8%, down from approximately 37.2% in previous years, but still considered high, placing Indonesia among the countries with the highest stunting burden in the world (Suratri et al., 2023). Furthermore, several national surveys and regional studies report that the prevalence of stunting in toddlers in Indonesia remains in the range of 28–36%, with variations between provinces; for example, the 2021 Indonesian Nutritional Status Survey in urban areas recorded a prevalence of stunting of 16.8%, underweight of 13.7%, and wasting of 6.9% in toddlers (Permatasari, Chairunnisa, Djarir, Herlina, Fauziah, Andriyani, & Chadirin, 2023). These figures illustrate that the problem of undernutrition (stunting, underweight, wasting) and overnutrition (overweight) in toddlers remains a significant double burden of malnutrition both globally and in Indonesia.

Toddler nutritional status data can be described based on the weight-for-height (BW/H) index, as commonly used in nutrition surveys at health care facilities. Descriptive research at the Bojong Rawalumbu Community Health Center, for example, categorized toddlers aged 0–59 months into categories of malnutrition, undernutrition,

good/normal nutrition, risk of overnutrition, overnutrition, and obesity based on BW/H, thus providing a detailed distribution of nutritional status within a single health center work area (Mizan, Oktamianti, & Soliah, 2023). A similar approach was used in another study on the nutritional status of toddlers at the Kotaraja Jayapura Community Health Center, which analyzed secondary data on toddlers aged 0–59 months using BW/A, BH/A, and BW/H indices according to WHO standards, and found that approximately 76.3% of toddlers were in the normal category based on BW/H, while the remainder were spread across the categories of undernutrition, severe malnutrition, and obesity (Rante, Rahayu, Elieser, Astawa, & Kambu, 2024). At the village level, descriptive research in Kedalon also showed a similar pattern: most toddlers had normal BW/H ($\pm 84.9\%$), with small proportions of undernutrition, overnutrition, obesity, and severe malnutrition when classified according to the BW/H index (Fibrinika & Abdullah, 2024).

Key factors contributing to malnutrition (wasting and stunting), overweight, and micronutrient deficiencies in children under five include inadequate feeding patterns and practices (low meal diversity and frequency) and limited access to basic health and nutrition services (Sheikh, Akram, Ali, Haque, Tisha, Mahumud, & Sultana, 2020). Several studies in low- and middle-income countries indicate that only about 17–54% of children meet minimum dietary diversity, and less than a quarter of children receive the minimum acceptable diet required for optimal growth and development (Thenarangam, Ghosh, Vishnoi, Shree, Vasireddy, RC, & Madhari, 2025).

Parents play a crucial role in determining children's feeding patterns and eating habits at home. Parents, especially mothers, are responsible for regulating the type, quantity, and frequency of food intake so that children receive sufficient and balanced nutrition to support optimal growth and development (Fazrin, Daha, & Ilmron Musa, 2022). Various studies have shown that good parental feeding practices, such as providing balanced, nutritious meals, providing three main meals and two snacks daily, monitoring the consumption of sweets and snacks, and being a role model in choosing healthy foods, are associated with normal nutritional status in children (Nofiana & Purwito, 2025). Studies in community health centers

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and schools have shown that most children with good eating patterns also have normal nutritional status, while inappropriate eating patterns are associated with both undernutrition and overnutrition in toddlers and preschoolers (Masturina, Hardjito, & Rahayu, 2023).

RESEARCH METHOD

The research design used in this study is quantitative with analytical studies. This study uses a cross-sectional study approach to see the relationship between feeding patterns and the nutritional status of preschool children (3-5 years old) at the UPTD Banda Sakti Health Center, Lhokseumawe City. The population in this study was taken based on the number of preschool children (3-5 years old) who visited the UPTD Banda Sakti Health Center,

Lhokseumawe City. The number of toddlers is 4.041 people. The research sample is a portion of the objects taken from the entire object studied and is considered to represent the entire population. In this study the sampling technique used is random sampling, a sampling technique in which each member of the population has an equal and fair opportunity to be selected as a research sample from all toddlers totaling 107 people. This research was conducted at the UPTD Banda Sakti Health Center, Lhokseumawe City. This research was conducted from July 27 to August 11, 2025. This research used analytical research that analyzed the relationship between two variables (bivariate): response time and nutritional status. The analysis tool used was Chi-Square.

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RESEARCH RESULTS**Table Characteristics of Respondent (N=107)**

Variable	Results	P-value
Age (Mean±SD) (years)	(34.33±5.58) (26-55)	
26-35	70/65.4	
36-45	33/31.0	
46-55	4/3.6	
Maternal Education (n/%)		
College	24/22.4	
High School	66/61.6	
Elementary and Middle School	17/16.0	
Maternal Occupation (n/%)		
Employed	36/33.6	
Not Employed	71/66.4	
Child's Gender (n/%)		
Female	62/58.0	
Male	45/42.0	
Nutritional Status (n/%)		
Well-Nutritioned	85/79.4	
Undernourished	22/20.6	
Eating Pattern (n/%)		0.000
Good	71/66.4	
Poor	36/33.6	

Based on table above, it can be seen that the age of the largest number of respondents in the young adult category is 70 respondents, with the highest level of education of respondents in secondary school, namely 66 respondents, and mothers who do not work as many as 71 respondents, and most of the preschool children in this study were female, namely 62 children. Nutritional status in toddlers aged 3-5 years consists of good nutrition, namely 85 respondents (79.4%) and malnutrition as many as 22 respondents (20.6%). Most toddlers with good nutritional events. The majority of feeding patterns in preschool children (3-5 years) are good as many as 71 respondents (66.4%) and not good as many as 36 respondents (33.6%). Most preschool children (3-5 years) who visit the health center are in the good eating pattern category. The results of the statistical test obtained a p-value of 0.000 (<0.05), so H_0 was rejected or H_a was accepted, meaning there was a relationship between feeding patterns and nutritional status in pre-school children (3-5 years).

DISCUSSION

The results of the study showed that out of 71 respondents with good feeding patterns, the dominant one was with good nutritional status, namely 64 (90.1%) and out of 36 respondents with poor feeding patterns, the dominant one was in the good nutritional status category, namely 21 people (58.3%) and

malnutrition as many as 15 people (41.7%). The results of the statistical test obtained a p-value of 0.000 (<0.05), so H_0 was rejected or H_a was accepted, meaning there was a relationship between feeding patterns and nutritional status in pre-school children (3-5 years).

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Nutritional status is influenced by two main factors: adequate food intake and health, particularly the presence of infectious diseases (Amfotis, 2023). Infectious diseases are health disorders caused by biological agents such as viruses, bacteria, or parasites, which can cause diarrhea, acute respiratory infections (ARI), and various other infections in children. The relationship between nutrition and infection is bidirectional: insufficient or unbalanced food intake weakens the immune system, making children more susceptible to infection, while repeated infections reduce appetite, interfere with nutrient absorption, increase energy needs, and cause nutrient loss through vomiting or diarrhea, thus worsening nutritional status (Nurhastutik & Susilaningrum, 2022).

Meanwhile, indirect factors influencing children's consumption patterns include the nutritional quality of available food, the availability of non-family feeding programs (such as daycare, school, or community services), and eating habits formed through repeated interactions within the family and social environment (Lutter, Grummer-Strawn, & Rogers, 2021). A family's socioeconomic status and purchasing power determine their ability to provide a balanced, nutritious diet and limit foods high in sugar, salt, and fat, thus significantly influencing children's daily eating patterns. Furthermore, the physical and social environment, including the availability and accessibility of healthy foods at home, school, and the surrounding community, school policies, exposure to advertising, and cultural norms, also influence children's food choices, both healthy and unhealthy (Sawyer, van Lenthe, Kamphuis, Terragni, Roos, Poelman, & PEN Consortium, 2021).

Dietary patterns are comprehensive information that describes the types and quantities of food a person consumes each day, while also reflecting consistent eating habits and behaviors. Dietary patterns relate not only to what and how much food is eaten, but also to how individuals or groups select, organize, and consume food in response to physiological, psychological, cultural, and social influences. This includes attitudes, beliefs, and food preferences or choices, such as the habit of consuming certain staple foods, animal and plant side dishes, vegetables, fruits, and snacks, as well as the frequency and timing of meals throughout the day (Azizah & Rizana, 2023).

This is in line with research findings in the Parigi Community Health Center, Muna Regency, which showed a significant relationship between dietary patterns and the nutritional status of toddlers (aged 12–59 months) with a p value of 0.000 ($p < 0.05$). Most toddlers with good dietary patterns have good nutritional status, while toddlers with poor dietary patterns (eating frequency < 3 times/day and low menu quality) are at higher risk of malnutrition (Suratri et al., 2023). Another study in the Putri Ayu Community Health Center, Jambi City, also found that maternal feeding behavior is significantly related to toddler nutritional status, where the majority of mothers who behave well in feeding have children with good nutritional status (Elfandes, 2023).

This is also supported by the research results in the working area of the Cikeusal Community Health Center (UPT), which found that most mothers have good parenting patterns (79.8%) and proper feeding patterns (70.6%), with the majority of toddlers having good nutritional status (90.8%). Bivariate analysis showed a significant relationship between parenting patterns and toddler nutritional status ($p = 0.004$; OR = 7.78) and between feeding patterns and toddler nutritional status ($p = 0.001$; OR = 12.50), which means that the better the parenting pattern and the more appropriate feeding pattern, the greater the chance of toddlers having good nutritional status (Lestari & Prihardja, 2025). In line with this, research showed that inappropriate feeding patterns increase the risk of stunting in toddlers, where toddlers with inappropriate eating patterns have a 3.3 times greater chance of experiencing stunting than those who receive appropriate eating patterns (Wibowo, Tristiyanti, Normila, & Sutriyawan, 2023).

The results of this study are also in line with the research in elementary schools in the Cempaka Village area, which showed that of 30 children aged 6–8 years, most had a moderate diet (80%) with a distribution of nutritional status in the form of good nutrition 33.3% and overnutrition 46.7%, while children with good diets (20%) all had good nutritional status. The Spearman Rank test showed a significant relationship between children's diet and nutritional status of children aged 6–8 years in elementary schools in the Cempaka Village area (Rahmayanti & Damayanti, 2016). This finding is reinforced by the research in Sonosewu Elementary School, Bantul, which reported that children with good diets ($\geq 80\%$

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AKG) tended to have normal nutritional status, and Chi-Square analysis showed a significant relationship between diet and nutritional status ($p = 0.008$) (Noviani, Afifah, & Astiti, 2016).

Good feeding patterns can improve the nutritional status of preschool children, children with good dietary arrangements and on average with good nutritional status, while children with poor dietary patterns on average with poor nutritional status. There are still many preschool children with malnutrition, one of the causes is poor feeding patterns including the type, schedule and amount of food given. At the time of the study, most mothers who have preschool children (3-5 years) with good nutritional status are in the category of good feeding patterns, likewise, mothers who have preschool children (3-5 years) with poor nutritional status, most of the feeding patterns are not good, this is driven by good feeding patterns supported by good knowledge about food, resulting in the nutritional status of preschool children (3-5 years) in the category of good or normal nutritional status.

CONCLUSION

There is a significant relationship between feeding patterns and the nutritional status of preschool children aged 3–5 years, as evidenced by statistical test results with a p-value of 0.000 (<0.05), thus accepting the alternative hypothesis. This finding indicates that the better the feeding patterns implemented by mothers, the better the nutritional status of children. Therefore, it is necessary to increase mothers' awareness and knowledge regarding the importance of appropriate feeding patterns as an effort to prevent and overcome malnutrition problems in preschool children.

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