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The relationship between dietary patterns and nutritional status among children aged 24-59 months

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Abstract

Background: Nutritional problems among children under five remain an important public health concern. Dietary patterns are one of the factors associated with children's nutritional status because food intake contributes to the fulfillment of energy and nutrient requirements for growth and development.

Purpose: To determine the relationship between dietary patterns and nutritional status among children aged 24–59 months.

Method: This quantitative study used an observational analytic design with a cross-sectional approach. The population consisted of 188 children aged 24–59 months and their mothers in Banyuwangi Village, the working area of Banyumas Public Health Center, Pringsewu Regency. Total sampling was used, resulting in 188 respondents. Data were collected using a dietary pattern questionnaire and nutritional status assessment based on the weight-for-age (WFA) indicator. Data were analyzed using the Chi-Square test.

Results: Most children had good dietary patterns, comprising 93 respondents (49.5%), while 69 respondents (36.7%) had adequate dietary patterns and 26 respondents (13.8%) had poor dietary patterns. Based on nutritional status, 99 children (52.7%) had normal weight-for-age, 64 (34.0%) were underweight, and 25 (13.3%) were severely underweight. The Chi-Square test showed a significant relationship between dietary patterns and nutritional status ($p < 0.001$).

Conclusion: Dietary patterns were significantly associated with nutritional status among children aged 24–59 months. Parents are encouraged to provide diverse and balanced meals according to children's nutritional needs and developmental stage.

Keywords: Children Under Five; Dietary Pattern; Nutritional Status.

INTRODUCTION

Nutritional problems among children under five remain one of the major public health concerns worldwide. It is estimated that approximately 42.8 million children under five worldwide experience underweight (World Health Organization, 2024). In Indonesia, based on the 2024 Indonesian Nutrition Status Survey the prevalence of underweight among children under five reached 14.8%, an increase from 12.3% in 2023. These data indicate that nutritional problems among children under five remain a challenge that requires attention because they may affect the quality of human resources in the future (Ministry of Health of the Republic of Indonesia, 2024).

Based on the 2024 Health Profile of Lampung Province, Pringsewu Regency had the highest prevalence of underweight in Lampung Province, at 19.7%, which was higher than that of several other regencies and had exceeded the national target. According to data from the Pringsewu District Health Office, Banyumas Public Health Center was one of the public health centers with a relatively high number of underweight cases. In 2023, 112 children under five (11.92%) were recorded as being underweight, increasing to 113 children (11.57%) in 2024, and during the January–October 2025 period, 136 children (9.5%) were recorded as underweight. These data indicate that nutritional status problems among

children under five in the working area of Banyumas Public Health Center still require serious attention (Lampung Provincial Health Office, 2025).

Undernutrition is a condition in which the body does not receive adequate nutritional intake, such as protein, vitamins, calories, and minerals. This condition can lead to various health problems, including wasting and stunting, making undernutrition among children a serious issue (Emmaria et al., 2024). Nutritional practices and nutrition education are among the main priorities in developed countries. The nutritional needs of children under five are particularly important because rapid growth and development occur during this period (Restam, 2021).

Efforts to prevent the risk of malnutrition among children under five can be carried out by improving mothers' knowledge, attitudes, and practices. The aim is to equip mothers with adequate nutritional knowledge and education so that they can adopt attitudes and practices that support key objectives, including understanding the importance of nutrition for young children, recognizing the risks of malnutrition and measures for its prevention, identifying nutritional sources and food fortification options, planning nutritious meals, and storing food properly to preserve its nutritional content (Lestari, 2022).

The determinants of undernutrition among children are multifactorial and are influenced by poverty, with major contributing factors including food and nutrition insecurity, low birth weight, low maternal education, and limited access to water, sanitation, and healthcare services (de Albuquerque et al., 2024). Inadequate food intake and poor dietary quality are direct causes of undernutrition (Yadav et al., 2024). Consuming nutrient-rich foods is known to provide many benefits for children (Lawson et al., 2024). One important effort to improve the nutritional status of children under five is to provide foods containing all the nutrients required according to their developmental stage. Implementing a balanced diet is essential to support optimal child growth and development. A balanced diet refers to a dietary pattern that provides the types and amounts of nutrients according to the body's needs, enabling children to grow healthily and develop properly. In

practice, a balanced diet should meet the energy and macronutrient requirements as well as the vitamin and mineral needs of children according to their age (Apriyanti et al., 2024).

Previous research has shown a significant relationship between dietary patterns and the nutritional status of children under five ($p = 0.004$) (Gao et al., 2024). Another study also reported that children under five with poor dietary patterns were more likely to experience undernutrition than those whose dietary patterns met their nutritional requirements. These findings indicate that dietary patterns are one of the factors that significantly influence the nutritional status of children under five (Rahmawati et al., 2022).

RESEARCH METHOD

This study employed a quantitative observational analytic design with a cross-sectional approach. The study examined the relationship between dietary patterns as the independent variable and nutritional status as the dependent variable. The study was conducted among children aged 24-59 months and their mothers in Banyuwangi Village, the working area of Banyumas Public Health Center, Pringsewu Regency, in 2026.

The study population consisted of 188 children aged 24-59 months. A total sampling technique was used, in which all members of the accessible population who met the study criteria were included as respondents. Therefore, the final sample consisted of 188 respondents. Data on dietary patterns were collected using a dietary pattern questionnaire. Nutritional status was assessed using the weight-for-age (WFA) indicator based on the applicable child growth standards. Nutritional status was categorized as severely underweight, underweight, and normal weight according to the applicable anthropometric classification.

Data were analyzed using univariate and bivariate analysis. Univariate analysis was used to describe the distribution of dietary patterns and nutritional status. The relationship between dietary patterns and nutritional status was analyzed using the Chi-Square test. Statistical significance was determined at $p < 0.05$. Important: The manuscript should additionally state the questionnaire's validity and reliability, the exact data collection period, inclusion and exclusion criteria, and research ethics approval number if these data are available.

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RESEARCH RESULTS

Table Frequency Distribution of Nutritional Status and Dietary Patterns among Children Under Five

Variable	Results	P-value
Nutritional Status (n/%)		0.000
Severely Underweight	25/13.3	
Underweight	64/34.0	
Normal Weight	99/52.7	
Dietary Pattern (n/%)		
good	93/49.5	
Adequate	69/36.7	
Poor	26/13.8	

The table above shows that the majority of toddlers had a normal nutritional status, namely 99 toddlers (52.7%), followed by underweight status in 64 toddlers (34.0%) and severely underweight status in 25 toddlers (13.3%). Regarding dietary patterns, most toddlers had a good dietary pattern, accounting

DISCUSSION

Based on the research findings, 25 children under five (13.3%) had a severely underweight nutritional status, 64 children (34.0%) were underweight, and 99 children (52.7%) had a normal nutritional status. According to the Ministry of Health of the Republic of Indonesia, the nutritional status of children under five based on the weight-for-age (WFA) indicator is categorized into several groups, namely severely underweight when the z-score is < -3 SD, underweight when the z-score is ≥ -3 SD to < -2 SD, and normal when the z-score is ≥ -2 SD to $+1$ SD. Nutritional status assessment is important to determine the growth and development conditions of children under five and to enable early detection of nutritional problems in children (Ministry of Health of the Republic of Indonesia, 2024).

Undernutrition is a condition in which the body experiences inadequate nutrient intake over a prolonged period, which can interfere with the growth and development of children under five. Undernutrition based on the weight-for-age (WFA) indicator is characterized by a z-score of ≥ -3 SD to < -2 SD according to WHO standards. If not properly managed, undernutrition may affect children's

for 93 toddlers (49.5%), followed by an adequate dietary pattern in 69 toddlers (36.7%), while 26 toddlers (13.8%) had a poor dietary pattern. The p-value of 0.000 indicates a statistically significant result ($p < 0.05$).

physical development, immune function, motor skills, and cognitive development (Sugiyono, 2024).

The researchers assumed that the nutritional status of children under five in this study was influenced by the dietary patterns provided by their parents. Children with good, regular, and nutritionally adequate dietary patterns tend to have normal nutritional status, whereas children with poor dietary patterns are at greater risk of experiencing undernutrition. The findings showed that most children had normal nutritional status; however, some children were still classified as underweight or severely underweight. This may be associated with dietary patterns that did not fully meet the children's daily nutritional requirements in terms of the amount, type, and frequency of food provided. Previous research has shown that dietary patterns are associated with the nutritional status of children under five, indicating that better dietary patterns are associated with better nutritional status (Gaol et al., 2024).

Based on the research findings, 26 children under five (13.8%) had poor dietary patterns, 69 children (36.7%) had moderate dietary patterns, and 93 children (49.5%) had good dietary patterns. The

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findings indicate that most children under five had good dietary patterns.

Dietary pattern refers to eating habits that include the types, amounts, and frequency of food consumed daily. A good dietary pattern for children under five should meet balanced nutritional requirements to support optimal growth and development. Dietary patterns that do not meet nutritional requirements may contribute to nutritional problems among children under five (Septiani et al., 2025).

The researchers assumed that good dietary patterns can help meet the nutritional needs of children under five and thereby support the achievement of normal nutritional status. Conversely, poor dietary patterns, such as irregular meal frequency and limited variety of nutritious foods, may increase the risk of undernutrition among children under five.

Dietary pattern refers to an individual's habitual food consumption, including the types, amounts, and frequency of food consumed according to the body's needs. Among children under five, a good dietary pattern should follow the principles of balanced nutrition, including sources of carbohydrates, protein, fat, vitamins, and minerals, consumed in amounts and frequencies appropriate for the child's age. A good dietary pattern helps fulfill energy and nutrient requirements, thereby supporting growth and development and maintaining optimal nutritional status. Conversely, poor dietary patterns may result in inadequate nutrient intake and increase the risk of undernutrition (Ministry of Health of the Republic of Indonesia, 2023).

The nutritional status of children under five is influenced by various factors, including direct and indirect factors. One of the direct factors is dietary pattern. Children who consume a less diverse range of foods, have inappropriate meal frequencies, or receive insufficient amounts of food to meet their nutritional requirements tend to have a higher risk of undernutrition than children whose dietary patterns follow the principles of balanced nutrition. Therefore, implementing a good dietary pattern is an important effort to improve and maintain the nutritional status of children under five.

From the researchers' perspective, the findings of this study indicate that dietary pattern plays an important role in determining the nutritional status of

children under five. Based on observations during the study, most families with children who had undernutrition came from low-income households. Most household heads worked as tile workers, daily laborers, or farmers with unstable incomes. In addition, some mothers also worked as daily laborers to support the family's financial needs, while others were housewives. These economic conditions limited the families' ability to provide nutritious food. The researchers also found that most parents had a habit of providing food based on the perception that "the most important thing is that the child eats a lot and feels full," without paying sufficient attention to balanced nutrient intake, including adequate protein, vitamins, minerals, and food variety in accordance with the principles of balanced nutrition. Consequently, the nutritional needs of children under five were not fully met, even though the amount of food consumed was considered sufficient.

CONCLUSION

Most children aged 24–59 months had good dietary patterns (49.5%) and normal nutritional status (52.7%). There was a significant relationship between dietary patterns and nutritional status among children aged 24–59 months ($p < 0.001$).

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