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THE RELATIONSHIP BETWEEN EATING PATTERNS, FAMILY SIZE, AND PERSONAL HYGIENE WITH THE NUTRITIONAL STATUS OF ELEMENTARY SCHOOL CHILDREN IN GRADES 4-6 IN ARONGAN LAMBALEK DISTRICT

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Abstract

School-aged children are a vulnerable group for nutritional disorders because they are in a period of rapid growth and development, requiring a balanced intake of nutrients. In Arongan Lambalek Subdistrict, West Aceh Regency, cases of undernutrition are still found among elementary school children, which are suspected to be influenced by irregular eating patterns, large family size, and suboptimal personal hygiene practices. This study aims to examine the relationship between eating patterns, family size, and personal hygiene with the nutritional status of elementary school children in grades 4–6 in Arongan Lambalek Subdistrict. The research employed an analytical survey with a cross-sectional approach. The population consisted of all students in grades 4–6 at SDN Arongan Wolya, MIN 5 Aceh Barat, MIN 12 Aceh Barat, SDN Drien Rampak, SDN Keub, and SDN Teupin Peuraho, with a total sample of 235 students selected using total sampling. Data were collected using a Food Frequency Questionnaire (FFQ) for eating patterns, a family size questionnaire, and a personal hygiene questionnaire, while nutritional status was measured based on weight-for-height (BB/TB). Data analysis was performed using the chi-square test. The results showed p-values of 0.000 for eating patterns, 0.000 for family size, and 0.004 for personal hygiene. The study concluded that eating patterns, family size, and personal hygiene were significantly associated with the nutritional status of elementary school children. It is recommended that schools and parents increase attention to children's eating habits and personal hygiene through regular nutrition and health education. Future researchers are advised to include additional variables such as nutritional knowledge and socioeconomic status to obtain a more comprehensive understanding of the factors affecting the nutritional status of elementary school children.

Keywords: Eating Patterns, Family Size, Personal Hygiene, Nutritional Status

INTRODUCTION

Nutritional issues remain a public health challenge that has not been fully resolved globally. The World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF) report that the global prevalence of malnutrition has reached 6.8%, or an estimated 45 million (WHO & UNICEF, 2022). Meanwhile, in Indonesia, unresolved cases of malnutrition coincide with an increase in cases of overnutrition (Ernoma & Wirjatmadi, 2018). The 2018 Basic Health Research (Riskesdas) reported that the nutritional status of children aged 5–12 years, measured using the body mass index for age, was 2.5% of children who were severely wasted, 6.8% of children who were underweight, 20.6% of children who were overweight, and 23.6% of children who were stunted.

Child nutrition issues in Aceh Province remain a serious challenge, with the prevalence of undernutrition fluctuating from 32% in 2017 to 19% in 2020. The results of the Indonesian Health Survey (2023) indicate a double nutritional burden, with overweight prevalence at 10.2%, obesity at 7.0%, and stunting reaching 17.1%. Meanwhile, in West Aceh Regency, the stunting rate remains high at 33.4%, far above the national target of 14% in 2024. This condition illustrates the still low quality of children's nutritional intake and suboptimal parenting practices and healthy lifestyles at the household level. This problem indicates the need for more serious attention from the local government in efforts to improve the nutrition of elementary school children in a sustainable manner. Considering the persistently high rate of nutritional imbalance among elementary school children in various regions, particularly in Arongan Lambalek District, West Aceh Regency. Although the prevalence of malnutrition has decreased nationally, the double burden of malnutrition, i.e., concurrent undernutrition and overnutrition, remains a serious

challenge at the regional level. This situation indicates that children's dietary patterns, family size, and personal hygiene do not fully reflect a healthy lifestyle that supports optimal growth. Therefore, according to the Ministry of Health (2024) and Ratna (2025), elementary school children aged 6–12 years require adequate nutritional intake to support optimal growth and development. Because children who experience malnutrition can weaken the child's immune system, making them susceptible to disease. In addition, irregular eating patterns often cause an imbalance between nutritional intake and body needs, which in turn causes nutritional problems, both in the form of malnutrition and overnutrition (Seprianty et al., 2015; Sari et al., 2016). Meanwhile, according to research by Faradevi (2011), the number of family members also plays a role in fulfilling nutritional needs, where children with small family sizes tend to have better nutritional fulfillment. Meanwhile, a research study by Handayani & Abbasiah (2020) found that children with poor personal hygiene have a higher chance of experiencing nutritional status disorders. The results of a preliminary survey conducted by researchers in several elementary schools in Arongan Lambalek District also strongly indicate that children with poor diets, from large families, and poor personal hygiene are more likely to experience abnormal nutritional status. This situation emphasizes the need for further research to understand the extent to which these factors contribute to the nutritional status of elementary school children, so that they can form the basis for developing more effective nutrition and personal hygiene interventions at the school and family levels. Therefore, this study aims to determine the relationship between diet, family size, and personal hygiene with the nutritional status of elementary school children in grades 4–6 in Arongan Lambalek District in 2024.

METHODOLOGY

This study used an analytical survey research design with a cross-sectional design. Data collection was carried out at one time to measure the variables of eating patterns, family size, and personal hygiene with nutritional status simultaneously. The population of this study were 4th, 5th, and 6th grade elementary school students in Arongan Lambek District located in 6 (six) elementary schools, namely SDN Arongan Wolya, MIN 5 Aceh Barat, MIN 12 Aceh Barat, SDN Drien Rampak, SDN Keub, and SDN Teupin Peuraho with a total population of 235 students. The sampling technique in this study was total sampling of 235 students with sample details can be seen in Table 1.

Table 1.
Number of Research Samples

School	Grade 4	Grade 5	Grade 6	Amount
Arongan Woyla Elementary School	7	8	13	28
MIN 5 West Aceh	10	6	8	24
MIN 12 West Aceh	9	10	9	38
Drien Rampak Elementary School	10	21	14	45
Keub Elementary School	17	27	14	58
Teupin Peuraho Elementary School	17	20	15	52
Total	70	92	73	235

The data sources of this research consist of primary data and secondary data. Primary data were collected directly by the author from respondents in the field. Meanwhile, secondary data are data that have been compiled and published by government institutions such as research results and nutritional survey results, as well as by universities that publish scientific papers, journals, theses to be collected to support the completeness of this journal writing. Research data were collected through the Food Frequency Questionnaire (FFQ) form with the categories of Poor eating patterns (score ≤ mean 1325) and Good eating patterns (score > mean 1325), family size questionnaire with small family categories (≤ 4), medium (5), and large (≥ 6), and personal hygiene questionnaire with poor (score 0-6) and good (score 7-13). Meanwhile, nutritional status was measured using the BMI/U Z-score index (weight for age) with normal (-2 SD to +1 SD) and abnormal (overweight, obesity, and underweight). The data analysis of this study consisted of univariate and bivariate analyses. Univariate data analysis is a data analysis process that aims to describe the characteristics of respondents and each research variable individually without looking at the relationship between variables presented in the form of frequency distributions and percentages. Meanwhile, bivariate analysis is an analysis process used to determine the relationship between independent variables and dependent variables

using chi-square results to determine whether there is a meaningful relationship between the independent variables and the dependent variable. If the p-value is <0.05, then it can be concluded that there is a statistically significant relationship. In addition, the Odds Ratio (OR) value is used to determine the magnitude of the risk of an independent variable influencing the dependent variable.

RESEARCH RESULT

1. Respondent Characteristics

Based on research conducted on 235 respondents, the frequency and percentage distribution of gender, age, and class characteristics was obtained in the research sample of elementary school children in grades 4-6 in Arongan Lambalek District as presented in detail in Table 2.

Table 2.
Frequency Distribution and Percentage of Research Respondent Characteristics

Characteristics	Category	Frequency N = 235	Percentage (%)
Gender	Man	116	49.4
	Woman	119	50.6
Age	8 Years	9	3.8
	9 Years	60	25.5
	10 years	75	31.9
	11 years old	57	24.3
	12 years old	34	14.5
Class	Grade 4	70	29.8
	Grade 5	92	39.1
	Grade 6	73	31.1

Source: Primary Data (Processed, 2025)

Based on Table 2, it shows that of the total 235 respondents, 49.4% were male and 50.6% were female. Furthermore, the age distribution of respondents was in the age range of 8 to 12 years, where the majority of respondents were 10 years old (31.9%), followed by 9 years old (25.5%), 11 years old (24.3%), and 12 years old (14.5%), while the least was 8 years old (3.8%). Meanwhile, based on the characteristics of the class level, the respondents of this study mostly came from grade 5 at 39.1%, followed by grade 6 at 31.1%, and grade 4 at 29.8%.

2. Univariate Analysis

Based on research conducted on 235 respondents, the frequency and percentage distributions related to eating patterns, family size, personal hygiene, and nutritional status of elementary school children in grades 4-6 in Arongan Lambalek District were obtained as presented in detail in Table 3.

Table 3.
Frequency and Percentage Distribution of Dietary Patterns, Family Size, Personal Hygiene and Nutritional Status

Variables	Category	Frequency N = 235	Percentage (%)
Dietary habit	Not enough	142	60.4
	Good	93	39.6
Family Size	Small	83	35.3
	Currently	110	46.8
	Big	42	17.9
Personal Hygiene	Not enough	128	54.5
	Good	107	45.5
Nutritional status	Abnormal	137	58.3
	Normal	98	41.7

Source: Primary Data (Processed, 2025)

Based on Table 3, it shows that out of a total of 235 respondents, there were 142 people (60.4%) with poor eating habits and 93 people (39.6%) had good eating habits. Furthermore, the distribution of the family size variable shows that most respondents came from medium-sized families as many as 110 people (46.8%), followed by small families as many as 93 people (35.3%), and large families as many as 42 (17.9%). Furthermore, the distribution of the personal hygiene variable shows that as many as 128 people (54.5%) had poor personal hygiene and as many as 107 people (45.5%) had good personal hygiene.

3. Bivariate Analysis

Based on the research that has been conducted, the results of bivariate analysis in the form of crosstabs and chi-square test results of the relationship between eating patterns, family size and personal hygiene with the nutritional status of elementary school children in grades 4-6 in Arongan Lambalek District are as follows:

Table 4.
The Relationship Between Dietary Patterns, Family Size, and Personal Hygiene with the Nutritional Status of Elementary School Children in Grades 4-6 in Arongan Lambalek District 2024

Variables	Category	Nutritional status				Amount		P.Value	OR 95% CI
		Abnormal		Normal					
		n	%	n	%	f	%		
Dietary habit	Not enough	113	79.6	29	20.4	142	100	0,000	11,203 (6,037-20,788)
	Good	24	25.8	69	73.2	93	100		
Family Size	Small	30	36.1	53	63.9	83	100	0,000	-
	Currently	73	66.4	37	33.6	110	100		
	Big	34	81.0	8	19.0	42	100		
Personal Hygiene	Not enough	86	67.2	42	32.8	128	100	0.004	2,248 (1,324-3,817)
	Good	51	47.7	56	52.3	117	100		

Source: Primary Data (Processed, 2025)

Table 4 shows that children with inadequate dietary habits are more likely to experience malnutrition, amounting to 79.6%. Conversely, only 25.8% of children with good dietary habits experience malnutrition. The chi-square analysis results obtained a p-value of 0.000 <0.05, meaning there is a relationship between dietary habits and nutritional status. The Odds Ratio (OR) value of 11.203 indicates that children with inadequate dietary habits are 11.203 times more likely to experience malnutrition than children with good dietary habits. Then, children with large families are more likely to experience malnutrition, amounting to 81.0%. Conversely, only 36.1% of elementary school children with small families experience malnutrition. The chi-square analysis results obtained a p-value of 0.000 <0.05, meaning there is a relationship between family size and children's nutritional status. Furthermore, children with inadequate personal hygiene are more likely to experience malnutrition, amounting to 67.2%. Conversely, 47.7% of children with good personal hygiene experience malnutrition. The chi-square test results obtained a p-value of 0.004 < 0.05, indicating a relationship between personal hygiene and nutritional status. The Odds Ratio (OR) value was 2.238, indicating that children with poor personal hygiene were 2.238 times more likely to experience malnutrition.

DISCUSSION

1. The Relationship Between Dietary Patterns and Nutritional Status of Elementary School Children in Grades 4-6 in Arongan Lambalek District, 2024

The results of the study on the relationship between eating patterns and the nutritional status of elementary school children in grades 4-6 in Arongan Lambalek District showed that elementary school children with poor eating patterns showed a higher proportion of abnormal nutrition at 80.8%. Meanwhile, in the group of elementary school children with good eating patterns, only 25.8% experienced abnormal nutritional conditions. The results of the chi-square test analysis obtained a p-value of 0.000 < 0.05, meaning there is a relationship between eating patterns and nutritional status. The Odds Ratio (OR) value of 12.095 indicates that children with poor eating patterns will be 12.095 times more at risk of having abnormal nutritional status than children with good eating patterns. Based on the research results above, the author assumes that dietary patterns are the primary foundation for meeting a person's daily nutritional needs. A poor diet refers not only to irregular meal frequency but also to the quality and quantity of food consumed. Therefore, children who do not receive a diverse and nutritious diet are highly likely to experience

deficiencies in essential substances such as energy, protein, iron, vitamin A, and zinc, which play a vital role in maintaining the body's nutritional status. Nutritional imbalances make children susceptible to infectious diseases and slow the body's growth and recovery processes. This research aligns with a study by Yulianti and Fajriyah (2021) that found that children who only consume staple foods without nutritious side dishes and rarely eat breakfast are 2.4 times more likely to experience malnutrition than children with a balanced diet. Meanwhile, another study by Ananda and Nurhaeni (2020) showed a significant relationship between diet and the nutritional status of school-age children. Children with irregular eating habits and rarely consuming vegetables, fruit, and animal protein sources are at higher risk of malnutrition. The results of this study are supported by the theory of balanced nutrition, which is the scientific basis explaining the relationship between diet and a person's nutritional status. According to Almatsier (2009), balanced nutrition is a daily diet containing nutrients in the types and amounts appropriate to the body's needs. Therefore, an imbalance in nutrient intake can lead to metabolic disorders, a weakened immune system, and stunted child growth. Furthermore, the theory of balanced nutrition emphasizes the importance of dietary diversity and regular eating as protective factors against malnutrition.

2. The Relationship Between Family Size and Nutritional Status of Elementary School Children in Grades 4-6 in Arongan Lambalek District, 2024

The results of the study on the relationship between family size and the nutritional status of elementary school children in grades 4-6 in Arongan Lambalek District showed that children with large families tended to experience more malnutrition, namely 81.0%. In contrast, in elementary school children who came from small families, only 39.8% experienced malnutrition. The results of the chi-square test obtained a p-value of 0.000 < 0.05, meaning there is a relationship between family size and the nutritional status of elementary school children in grades 4-6 in Arongan Lambalek District. Based on the research conducted, the author assumes that family size is inversely proportional to the level of well-being and nutritional fulfillment of each family member. In households with a large number of members, economic resources, especially income and food consumption, must be shared more widely. This results in a reduced availability of nutritious food for each individual, especially for children and vulnerable family members, because children in large families tend to have less optimal supervision and monitoring of their growth and development, which ultimately increases the risk of nutritional problems, especially malnutrition in elementary school children.

This research aligns with a study by Wijaya and Ramadhan (2021) that found that family size significantly influences the nutritional status of toddlers in impoverished areas, with toddlers living in families with more than five members experiencing higher rates of malnutrition than those living in smaller families. Research by Putri and Supriyadi (2022) found that families with more than five members tend to neglect their children's nutritional needs due to prioritizing other basic needs and paying less attention to daily nutritional intake. Both studies show that the larger the family size, the higher the risk of malnutrition in toddlers and children. The results of this study are also supported by the theory of household economics proposed by Becker (1991) that in a household, resource allocation occurs based on a priority scale, where the larger the number of family members, the more needs must be met, which automatically limits the allocation of resources (especially food and nutrition) for each family member. In addition, if in a limited economic condition, large families tend to experience difficulties in providing high-quality food for all family members, especially children. This is exacerbated by limited attention and supervision given to each child, thereby increasing the risk of malnutrition.

3. The Relationship Between Mother's Education and Exclusive Breastfeeding by Mothers of Toddlers Aged 6-59 Months in the Working Area of Drien Rampak Community Health Center, Arongan Lambalek District

The results of the study on the relationship between personal hygiene and the nutritional status of elementary school children in grades 4-6 in Arongan Lambalek District showed that children with poor personal hygiene had a higher proportion of abnormal nutrition, namely 66.9%. Conversely, in children with good personal hygiene, the proportion of abnormal nutrition was recorded at 52.1%. The results of the chi-square test obtained a p-value of 0.019 < 0.05, meaning there is a relationship between personal hygiene and nutritional status. The Odds Ratio (OR) value of 1.858 indicates that children with poor personal hygiene have a 1.858 times greater chance of experiencing abnormal nutrition compared to children with good personal hygiene. Based on the research results above, the author assumes that personal hygiene is closely related to a person's nutritional status, as poor hygiene practices can trigger infectious diseases, particularly those affecting the gastrointestinal tract, such as diarrhea and worms. These diseases disrupt the body's nutrient absorption process, which in the long term can lead to malnutrition. Poor personal hygiene

can also lead to chronic inflammation or infection, which requires the body to expend more energy to fight disease than just for growth or normal activity. This research aligns with previous research conducted by Rahayu and Hidayat (2021), which found that children with poor personal hygiene habits, such as not washing their hands before eating and after using the toilet, are twice as likely to experience malnutrition compared to children who maintain good personal hygiene. Another study by Fitria and Pranata (2020) found that poor personal hygiene increases the risk of infectious diseases in children, which disrupts nutrient absorption. Both studies confirm that poor personal hygiene not only impacts general health but is also a significant factor in declining nutritional status. The most relevant theory explaining the relationship between personal hygiene and nutritional status is the infection and malnutrition theory proposed by Park (2005), which states that there is a two-way relationship between malnutrition and infection. This theory states that infection can worsen nutritional status. Conversely, malnutrition can increase susceptibility to infection. This suggests that when someone has poor personal hygiene, such as not washing their hands, not bathing regularly, or using contaminated water, the risk of contracting infectious diseases such as diarrhea, worms, and skin infections increases sharply.

CONCLUSION AND SUGGESTIONS

Based on the results of the study, it can be concluded that there is a significant relationship between eating patterns, family size, and personal hygiene with the nutritional status of elementary school children in grades 4–6 in Arongan Lambalek District in 2024. Children who have poor eating patterns are at 12.095 times greater risk of experiencing abnormal nutritional status compared to children who have good eating patterns. Similarly, children who come from large families tend to have a higher proportion of abnormal nutritional status compared to children from small or medium families. In addition, children with poor personal hygiene have a 1.858 times greater risk of experiencing abnormal nutritional status compared to children who maintain good personal hygiene. These results indicate that eating patterns, family size, and personal hygiene are important factors that influence the nutritional status of elementary school children in the area.

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