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The Relationship Between Knowledge About Nutrition and Nutritional Status of Adolescent Girls in Grade VII at the Adolescent Posyandu in Tundakan Village

Sunah[1], Rifzul Maulina[2*]
[1-2]Institut Teknologi, Sains, dan Kesehatan RS.DR. Soepraoen Kesdam V/BRW, Indonesia
**Corresponding author: rifzulmaulina@itsk-soepraoen.ac.id*

Abstract. Background: Three nutritional problems experienced by adolescents in Indonesia are malnutrition, which causes stunting, micronutrient deficiencies, which cause anemia, and overweight. The 2018 Basic Health Research (Riskesdas) showed that 25.7% of adolescents aged 13-15 and 26.9% of adolescents aged 16-18 were stunted or severely stunted, 8.7% of adolescents aged 13-15 and 8.1% of adolescents aged 16-18 were wasted or severely wasted, and 16.0% of adolescents aged 13-15 and 13.5% of adolescents aged 16-18 were overweight. The impact of malnutrition can lead to death due to poor health. Objective: To determine the relationship between nutritional knowledge and nutritional status in seventh-grade female adolescents at the Tundakan Village Youth Integrated Health Post (Posyandu). Method: This was a quantitative study using a cross-sectional approach. The population in this study was all 130 seventh-grade female students at the adolescent Posyandu (Health Post) in Tundakan Village. A sample of 99 respondents was drawn using a random sampling technique. The research instruments used were questionnaires, scales, and a stature meter. The data obtained were analyzed using the Chi-Square test. Results: The Fisher Exact test showed a p-value of 0.044 > 0.05, indicating a relationship between nutritional knowledge and nutritional status among seventh-grade female adolescents at the adolescent Posyandu in Tundakan Village. Conclusion: There is a relationship between nutritional knowledge and nutritional status among seventh-grade female adolescents at the adolescent Posyandu in Tundakan Village. Recommendation: Parents at home and teachers at school are expected to play a role in monitoring adolescents' eating patterns to prevent abnormal nutritional status.

Keywords: Adolescents; Cross-Sectional Study; Nutritional Knowledge; Nutritional Status; Stunting

1. INTRODUCTION

The world is still facing the problem of malnutrition. According to a report by the Food and Agriculture Organization (FAO), the number of people suffering from malnutrition worldwide reached 768 million in 2020, an 18.1% increase from the previous year's figure of 650.3 million. The World Health Organization (WHO) states that malnutrition is a serious threat to global health. Malnutrition is estimated to be the leading cause of 3.1 million deaths annually (WHO, 2021).

According to the Child Protection Law, an adolescent is defined as someone aged 10-18 years and constitutes a significant segment of the Indonesian population (almost 20% of the population). Adolescents are potential leaders and drivers of future development. Adolescence is a particularly valuable time for them to maintain good physical and mental health, as well as receive a good education (Ministry of Health of the Republic of Indonesia, 2018).

The growth phenomenon during adolescence demands high nutritional needs to achieve maximum growth potential, as nutrition and growth are integrally linked. If nutritional needs are not met during adolescence, it can result in delayed sexual maturation and stunted linear growth. Nutrition during adolescence is also crucial for preventing chronic, nutrition-related

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diseases in adulthood, such as cardiovascular disease, diabetes, cancer, and osteoporosis (IDAI Youth Task Force, 2019).

Three nutritional problems experienced by adolescents in Indonesia are malnutrition, which causes stunting; micronutrient deficiencies, which cause anemia; and overweight. These problems are caused by inadequate nutritional intake, resulting in adolescents experiencing nutritional problems, whether due to nutritional deficiencies or excesses, preventing optimal growth and development. In Indonesia, the prevalence of nutritional deficiencies, particularly iron deficiencies, is as high as 23% among adolescent girls, resulting in anemia. Chronic energy deficiency, caused by inadequate nutritional intake, increases the risk of various infectious diseases and hormonal disorders (Indonesian Ministry of Health, 2019).

Based on the 2018 Basic Health Research (Riskesdas), it shows that 25.7% of adolescents aged 13-15 years and 26.9% of adolescents aged 16-18 years have stunting and very stunting nutritional status. There are 8.7% of adolescents aged 13-15 years and 8.1% of adolescents aged 16-18 years with wasting and very wasting conditions. Meanwhile, the prevalence of overweight and obesity is 16.0% in adolescents aged 13-15 years and 13.5% in adolescents aged 16-18 years. These data indicate that the nutritional conditions of adolescents in Indonesia need to be improved. According to UNICEF in 2017, changes in eating patterns and physical activity were found in adolescents (Ministry of Health of the Republic of Indonesia, 2020)

A balanced diet ensures the body's needs and activities are met. Adolescence is a transitional period from childhood to adulthood, characterized by rapid physical, mental, and emotional growth. Nutrient-rich foods are essential for growth and development. By consuming adequate and regular nutrition, adolescents will grow healthily, achieve high academic achievement, maintain the fitness to participate in all activities, and become quality human resources. Young women who consume adequate nutrition will maintain their reproductive health, making them healthy mothers-to-be upon marriage. Maintaining this healthy condition throughout pregnancy will result in the birth of healthy and intelligent children. Adequate nutrition is achieved by balancing the quantity and type of food consumed with needs, thus contributing to optimal bodily function (Ministry of Health of the Republic of Indonesia, 2018). The importance of fulfilling nutritional needs for adolescents through good eating habits, where adolescent girls are required to eat three times a day, including healthy snacks such as fruit, consume foods rich in fiber, such as vegetables, drink around 1,850-2,300 liters of water per day, and increase their consumption of fish and chicken, so that nutritional needs are met (Herliafifah, 2021).

The impact of malnutrition or suboptimal nutrition is associated with poor health and an increased risk of infectious diseases and non-communicable diseases such as cardiovascular disease (heart and blood vessel disease, hypertension, and stroke), diabetes, and cancer, which are the leading causes of death in Indonesia. More than half of all deaths in Indonesia are due to non-communicable diseases (Permenkes RI, 2014).

Zuhdy (2015) stated that the imbalance between nutrient consumption and nutrient needs essentially stems from misunderstandings and inappropriate nutritional behaviors, which can lead to nutritional problems in adolescents. Preventing nutritional problems requires balanced nutrition outreach activities that can serve as a guide for adolescents to increase their knowledge of meeting nutritional needs by improving diets, engaging in physical activity, maintaining a clean lifestyle, and regularly monitoring their weight to maintain a normal body weight (Ministry of Health Regulation, 2014).

Nutritional status monitoring was initially used as part of efforts to improve community nutrition, conducted by the Ministry of Health through nutritional surveillance. Nutritional status monitoring serves as a tool for monitoring and evaluating activities and as a basis for determining policies and planning activities to reduce nutritional problems. Initially, the most common nutritional problems were stunting, underweight, and wasting. However, currently, nutritional status monitoring is necessary for routine monitoring of adolescent nutritional status to prevent an increase in the percentage of nutritional problems. Currently, nutritional status problems include not only wasting but also obesity, which tends to increase over time. Monitoring activities are useful for describing nutritional status data that can be used as a reference in determining the prevalence of stunting, wasting, and obesity (Ministry of Health, 2017). Monitoring nutritional status aims to optimally improve the health status of high school students through monitoring and describing nutritional status (Ministry of Health of the Republic of Indonesia, 2017).

Nutritional status monitoring and description are conducted by measuring height (H) and weight (BW), which are then grouped based on the z-score value within the nutritional status category (Ministry of Health of the Republic of Indonesia, 2010). Data and information on adolescent nutritional status are used to plan and formulate nutrition program policies.

Nutritional status is a measure of success in meeting children's nutritional needs and nutrient utilization, as indicated by the child's weight and height. Adolescent nutritional needs are significant due to their continued growth. Adolescents require energy/calories, protein, calcium, iron, zinc, and vitamins to support physical activities such as school and daily activities. Every adolescent desires a healthy body to be able to engage in physical activity.

Energy consumption comes from food, and the energy obtained offsets the energy expended by the body (Winarsih, 2018). Many adolescents fail to consider the relationship between energy intake and energy expenditure, leading to nutritional problems such as weight gain or, conversely, excessive energy expenditure, which can lead to malnutrition (Mardalena, 2017).

Based on the results of a preliminary study conducted in September 2022 at the adolescent Posyandu (Integrated Health Post) in Tundakan Village, interviews with seven seventh-grade female students regarding their nutritional knowledge revealed that four had insufficient knowledge and three had good knowledge. Of the seven students, two were overweight, two were underweight, and three had a normal body mass index (BMI) for age.

Adolescents are the nation's future generation, and their nutritional status significantly impacts the nation's future. Therefore, based on the background described above, the researcher is interested in conducting research related to the relationship between nutritional knowledge and nutritional status among seventh-grade female adolescents at the adolescent Posyandu in Tundakan Village.

2. RESEARCH METHOD

Research Design

This study is a quantitative study with a cross-sectional design, which examines the dynamics of the correlation between risk factors and effects. This study uses a point-in-time approach, observation, or data collection (Notoatmodjo, 2018).

Setting and Samples

This study was conducted to determine the relationship between nutritional knowledge and nutritional status among seventh-grade adolescent girls at the Tundakan Village Youth Integrated Health Post (Posyandu). A population is a subject (e.g., a person) who meets the criteria for the research, and these subjects have been determined. The population in this study was 130 seventh-grade adolescent girls at the Tundakan Village Youth Integrated Health Post (Posyandu) in September 2022.

A sample is a subset of the total characteristics of a population. The sample in this study consisted of 99 adolescent girls, calculated using the Simple Size 2.0 software formula and drawn using a random sampling technique.

Data Analysis

Data analysis was processed using a computerized system using a non-parametric statistical test, namely Fisher's exact test.

3. RESULTS AND DISCUSSION

Characteristics

Table 1. Respondent Characteristics

	Category	Age	F	%
Age	Early Adolescence	10-12 tahun	93	93,9%
	Middle Teenager	13-15 tahun	6	6,1%
	Late Teenagers	16-19 tahun	0	0
	Total		99	100

Source: Primary Data, 2022

The results of the respondent characteristics, based on adolescent age, are presented in Table 4.1 above. The majority of respondents were in early adolescence, aged 10-12 years, and 6 (6.1%) were in middle adolescence, aged 13-15 years. According to Maria G P (2019), during adolescence, there is rapid physical, mental, emotional, and social growth and development. During this period, many issues negatively impact adolescent health and nutrition.

According to Yunda & Nidya (2017), a person's maturity will lead to greater maturity in thinking, mental development, and emotional well-being. With greater maturity, adolescents' mindsets can be influenced by their understanding of balanced nutrition. Adolescents also understand which foods contain nutrients, protein, fat, and carbohydrates. A person's tendency to engage in healthy behaviors is influenced by their level of knowledge, attitude, and skills. If the acceptance of behavior is based on positive knowledge, awareness, and attitude, the behavior will be sustained.

Knowledge of Nutrition in Seventh-Grade Female Adolescents at the Youth Integrated Health Post (Posyandu) in Tundakan Village

Table 2. Knowledge of Nutrition in Seventh-Grade Female Adolescents at the Youth Integrated Health Post (Posyandu) in Tundakan Village

Category	F	%
Good	25	25,3%
Enough	63	63,6%
Poor	11	11,1%
Total	99	100%

Source: Primary Data, 2022

Based on the results in Table 2 above, it can be seen that the majority of adolescent girls (63.6%) had adequate nutrition knowledge. 25 (25.3%) had good knowledge, and 11 (11.1%) had poor knowledge. From the researcher's field observations, all female students had received information about nutrition from counseling activities at school, teachers, and parents. However, not all had adequate knowledge; some had adequate knowledge, and some had

insufficient knowledge. This occurs because they do not apply it in their daily lives, leading to students tending to forget the information.

The questionnaire to measure respondents' knowledge yielded an average score per question of 70. The highest score was for question 4, concerning nutrient groups, where 96 out of 99 respondents answered correctly. The lowest score was for question 10, concerning types of nutrients, where only 21 out of 99 respondents answered correctly. The most common questions were about basic nutritional concepts, with 19 out of 28 questions. The average score for the concept of nutrition was 70.2, with a majority of respondents (70.9%) answering correctly. Four questions on factors influencing nutrition scored an average score of 51.7, with a majority of respondents (52.3%) answering correctly. Five questions on the effects of malnutrition scored an average score of 75, with a majority of respondents (75.6%) answering correctly.

The majority of respondents reported having sufficient knowledge because they had received information but not applied it, leading to a tendency to forget it. Respondents with good knowledge understood nutrition and received parental attention to address adolescents' nutritional needs. Respondents with insufficient knowledge, on the other hand, did not participate in counseling sessions or seek out nutrition information. This was due to the lack of parental and teacher involvement in providing nutrition information to adolescents.

Knowledge is the result of understanding that occurs through sensory processes, particularly the eyes and ears, regarding specific objects. Knowledge is a crucial domain for the development of overt behavior (Notoatmodjo, 2018). Knowledge has levels ranging from knowing, understanding to evaluating. According to Notoatmodjo (2018), the levels of knowledge are knowing, understanding, recalling, explaining, connecting, and evaluating. Therefore, a person needs time to digest the material/information received. Therefore, the knowledge of respondents in this study varied despite receiving information/materials on nutrition because each person's ability to digest information varies.

Nutritional Status of Seventh-Grade Adolescent Girls at the Tundakan Village Youth Health Post

Table 3. Nutritional Status of Seventh-Grade Adolescent Girls at the Tundakan Village Youth Health Post

Category	F	%
Normal	39	39,4
Thin	51	51,5
Obese	9	9,1
Total	99	100

Source: Primary Data, 2022

Table 3 above shows that the nutritional status of seventh-grade female adolescents at the Tundakan Village Youth Integrated Health Post (Posyandu) was predominantly underweight, representing 51 (51.5%) respondents. This is due to their physical condition, which makes it difficult to gain weight despite consuming sufficient food. Furthermore, adolescents are found to restrict their eating due to a desire for a certain body shape, known as body image.

According to Henggaryadi (2012), in Tri B R & Fitriana (2020), a discrepancy between an individual's perceived body shape and their perceived ideal body shape can lead to body dissatisfaction, which can affect self-esteem. A positive body image enhances self-worth, self-confidence, and strengthens one's identity, both to others and to oneself.

Thirty-nine (39.4%) adolescents with normal nutritional status have good eating habits and receive support from their parents, who provide nutritious food and monitor their eating habits. Every adolescent experiences a growth spurt. According to Festi P (2018), growth spurts in adolescents are characterized by an increase in the body's constituent materials and components, requiring adequate nutrition to maintain normal nutritional status.

The study also found that 9 (9.1%) respondents were obese due to poor eating habits, particularly those consuming fast food or junk food. These factors are attributed to the influence of peers, the lack of parental involvement at home, and the lack of monitoring by teachers at school.

This aligns with the theory of Atmatsier et al. (2011), which states that poor eating habits in adolescents stem from many factors, such as the surrounding environment and peers at school, which ultimately influence poor eating habits. According to Luluk & Luluk (2020), nutritional problems in adolescents arise from inappropriate eating behaviors, namely an imbalance between nutritional needs and nutritional fulfillment. Adolescents often skip meals and lack macronutrients (carbohydrates, protein, fat), and micronutrients (vitamins and minerals), which can lead to thinness and weight loss. In addition to diet, physical activity also influences nutritional status.

According to Oktovina & Ekawati (2020), the physical activity levels of school-aged adolescents generally range from light to moderate because most of their time is spent on school activities, especially studying. Lack of physical activity can cause body fat to accumulate, potentially leading to being overweight.

The role of parents is also crucial in ensuring adolescents' nutritional status. According to Siti et al. (2021), a stronger parental role indicates a positive impact on shaping habits related to the frequency and types of snacks chosen by schoolchildren. Furthermore, hereditary factors

also influence nutritional status. Symsopyan et al. (2019) stated that genetic factors can determine the number of fat cells in the body.

Adolescence is crucial because it is a transitional period between childhood and adulthood. Balanced nutrition during this period will significantly determine their future maturity.

The Relationship Between Nutrition Knowledge and Nutritional Status of Seventh-Grade Adolescent Girls at the Tundakan Village Youth Health Post (Posyandu)

Table 4. The Relationship Between Nutrition Knowledge and Nutritional Status of Seventh-Grade Adolescent Girls at the Tundakan Village Youth Health Post (Posyandu)

Nutritional Status of Adolescent Girls							P Value
Category			Thin	Normal	Fat	Total	
Teenagers' Knowledge of Nutrition	Good	F	15	8	2	25	0,044
		%	15,2	8,1	2	25,3	
	Enough	F	32	28	3	63	
		%	32,3	28,3	3	63,6	
	Not enough	F	4	3	4	11	
		%	4	3	4,1	11,1	
Total		F	51	39	9	99	
		%	51,5	39,4	9,1	100	
	Hasil Uji *Fisher Exact*						

Source: Primary Data & SPSS, 2022

The Fisher Exact test results in Table 4. above show a p-value of 0.044 <0.05, meaning Ho is rejected and Ha is accepted. Therefore, it can be concluded that there is a relationship between nutritional knowledge and nutritional status in seventh-grade female adolescents at the Tundakan Village Youth Integrated Health Post (Posyandu).

These results align with research by Yunda (2017) on "The Relationship Between Knowledge of Balanced Nutrition and Nutritional Status in XI-grade Female Adolescents in Accounting 2," which found a relationship between knowledge and nutritional status in female adolescents with a p-value of 0.003 <0.05. Yunda (2017) stated that a person's tendency to engage in healthy behaviors is influenced by their level of knowledge, attitude, and skills. If acceptance of a behavior is based on positive knowledge, awareness, and attitude, the behavior will be sustained.

The results of this study are inconsistent with research by Maria (2019) on "The Relationship between Nutrition Knowledge and Eating Habits and the Nutritional Status of Adolescent Girls at SMA N II Kupang City," which found no significant relationship between knowledge and nutritional status with a p-value of 0.619>0.05. According to Maria (2019), the reason for the absence of a relationship between knowledge and nutritional status is that

knowledge indirectly influences nutritional status, while the direct causes of nutritional problems are nutritional intake and infectious diseases. The differences in the types of research and data analysis used are: Maria (2019) study was observational and used the Chi-Square test for bivariate analysis. This study, however, is quantitative and used Fisher's exact test for bivariate analysis. The results in Table 4. above show that the majority of respondents (63.6%) had sufficient knowledge, while the majority (32.3%) had underweight nutritional status, and 3 (3%) had overweight nutritional status. This is because adequate knowledge, not balanced with positive attitudes and behaviors, can affect adolescents' nutritional status. Some adolescents restrict their diet and nutritional intake for fear of not achieving their ideal body shape. Despite having sufficient knowledge, the majority of obese adolescents have poor eating habits. They also found that adolescents do not limit their intake of unhealthy foods, such as consuming junk food, sweet foods and drinks, fried foods, and having a lack of activity, which causes body fat to accumulate, leading to obesity.

Of the respondents with good knowledge, 25 (25.3%), the majority (15.2%) also reported being underweight. This occurs because, despite knowing the nutritional needs, they do not apply them in their daily lives due to the influence of friends, such as dieting (restricting food intake) to achieve a certain body shape or achieve a desired body image. Furthermore, physical condition also affects adolescents' nutritional status, where consuming a sufficient amount of food does not result in weight gain. Meanwhile, 8 (8.1%) respondents had normal nutritional status due to good knowledge, supported by positive attitudes and behaviors, and parental support in providing food and monitoring their children's eating habits. Respondents stated that their parents limited their children's consumption of instant foods or junk food. Furthermore, 2 (2%) respondents were obese. This was due to the continued influence of friends who followed food trends, leading to frequent consumption of junk food such as kebabs, pizza, burgers, and other foods.

The study also found that 11 (11.1%) respondents had insufficient knowledge, with the majority being 4 (4.1%) obese due to a lack of knowledge about healthy food and not limiting their intake of instant foods and junk food. Furthermore, 4 (4%) respondents were underweight, a result of dieting to achieve a certain body shape and a lack of appetite, resulting in limited food consumption. Three (3%) respondents also had normal nutritional status due to parental supervision regarding unhealthy food consumption and adolescents' habits of not overly consuming unhealthy foods due to a healthy diet at home.

According to Festi (2018), several factors influence nutritional status in adolescents, including knowledge, which influences attitudes and behavior. With good knowledge, a person

can behave well, especially in implementing a healthy diet to achieve a normal nutritional status. Furthermore, growth (growth rate) also influences nutritional status, as the body and organs develop, making nutritional needs essential. Age also influences nutritional status. Younger adults (under 20 years old) require significant nutrition for growth. After that, nutritional needs decrease due to a slowdown in metabolism. Furthermore, the type of activity is a factor, as adolescents require nutrition for activity. In this study, all respondents were under 20 years old. Therefore, during their growth spurts, which require significant nutrition, adolescents' activity patterns are more concentrated at school, resulting in a variety of activities, including light and moderate activity.

Based on the above description, it can be concluded that there is no relationship between nutritional knowledge and nutritional status among seventh-grade female adolescents at the Tundakan Village Youth Integrated Health Post (Posyandu). Researchers assume this result is due to adolescents' influence at school, their tendency to follow food trends, resulting in frequent consumption of junk food, and the school environment, where instant foods or junk food are more common than healthy foods or foods that are good for adolescents. This lack of parental monitoring and teacher participation in monitoring adolescents' food choices is also a factor.

4. CONCLUSION AND SUGGESTIONS

From the above research, it can be concluded that the knowledge of adolescent girls about nutrition is mostly sufficient, with as many as 63 (63.6%) respondents. The nutritional status of adolescent girls in grade VII at the adolescent Posyandu in Tundakan Village is mostly thin, as many as 51 (51.5%). The results of the Fisher Exact test show a p-value of 0.044 <0.05, meaning there is a relationship between knowledge about nutrition and nutritional status in adolescent girls in grade VII at the adolescent Posyandu in Tundakan Village.

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