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# ANALYSIS OF ADOLESCENT NUTRITIONAL STATUS BASED ON FOOD CONSUMPTION PATTERNS AND PHYSICAL ACTIVITY AT MUHAMMADIYAH SENIOR HIGH SCHOOL IN BIMA CITY

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**ABSTRACT**

Adolescence is a critical period of rapid growth and development that requires adequate nutritional intake and balanced physical activity to achieve optimal health outcomes; however, nutritional problems such as energy deficiency, anemia, and imbalanced nutrient intake remain significant public health concerns in Indonesia. This study aimed to analyze the nutritional status of adolescents based on food consumption patterns and physical activity at Muhammadiyah Senior High School in Bima City using a descriptive analytic design with a cross-sectional approach. A total of 20 adolescents aged 16–19 years were selected through purposive sampling, and data were collected using anthropometric measurements, a 24-hour food recall, and a physical activity questionnaire. The findings revealed that most respondents experienced deficiencies in energy, protein, carbohydrates, fat, and iron intake, with low iron consumption increasing the risk of anemia, particularly among female adolescents. In addition, irregular eating habits, low dietary diversity, and imbalances between energy intake and physical activity were commonly observed. Although the majority of respondents had normal nutritional status, cases of undernutrition and overweight/obesity were also identified, indicating the presence of a double burden of malnutrition. Statistical analysis showed a significant relationship between dietary patterns and nutritional status ($p < 0.05$), highlighting the importance of proper eating habits in maintaining adolescent health. Therefore, comprehensive interventions, including nutrition

education, promotion of balanced diets, and appropriate physical activity, are essential to improve adolescent nutritional status and support the development of effective school-based nutrition programs.

**Keywords:** nutritional status, adolescents, food consumption patterns, physical activity, anemia.



## 1. INTRODUCTION

The selection of the topic on the analysis of adolescent nutritional status is motivated by the persistently high prevalence of nutritional problems in this age group, which remains an important public health issue, particularly in the school environment. Adolescence is a period of rapid growth that requires balanced nutritional intake to support physical, cognitive, and sexual development (Rahayu, 2020). However, in reality, many adolescents still have irregular eating patterns, limited dietary diversity, and physical activity that is not proportional to energy intake. These conditions make adolescents a vulnerable group to various nutritional problems, both undernutrition and overnutrition(Mahyuddin et al., 2024). According to the World Health Organization, adolescents are at risk of anemia (Tanziha et al., 2016), chronic energy deficiency, overweight, and obesity, which can have long-term impacts on health, immunity, learning concentration, and future productivity(World Health Organization, 2018).

In Indonesia, adolescent nutritional problems remain a serious concern. The prevalence of anemia, especially among adolescent girls, is still relatively high and is generally caused by low iron intake and unbalanced dietary patterns(Anggraini & Dewi, 2022). In addition, cases of chronic energy deficiency are still commonly found due to insufficient energy intake. On the other hand, changes in adolescent lifestyles, such as the tendency to consume fast food high in sugar and fat but low in essential nutrients such as protein, vitamins, and minerals, further worsen nutritional conditions. Skipping meals, particularly breakfast, and low consumption of fruits and vegetables also contribute to nutritional imbalances.

Adolescent nutritional status is an important public health indicator that reflects the balance between nutrient intake and the body's needs during rapid growth. Previous studies indicate that nutritional problems in adolescents arise from improper dietary behavior, particularly the imbalance between nutrient intake and recommended dietary allowances (Andya et al., 2022). Meanwhile, adolescents experience a rapid growth phase known as the "adolescence growth spurt," which requires relatively

high nutrient intake (Rahayu, 2020). Data from Riskesdas 2018 show the prevalence of undernutrition (6.8%), overweight (11.3%), and obesity (5.1%) among adolescents aged 16–18 years (Purwaningsih & Sumarmi, 2022), supported by findings that adolescents aged 13–18 years experience stunting (52.6%), undernutrition (16.8%), and overweight (29.5%), indicating a double burden of malnutrition (Fauziyyah et al., 2021).

Food consumption patterns and physical activity are key determinants of nutritional status and have been shown to have significant relationships in various studies. Energy intake and physical activity are closely related to nutritional status, where long-term imbalances can lead to nutritional problems (Putri et al., 2025a). In addition, dietary patterns, physical activity, and lifestyle factors such as gadget use are associated with adolescent nutritional status (Kumala et al., 2019). Therefore, this study was conducted to analyze adolescent nutritional status based on food consumption patterns and physical activity at Muhammadiyah Senior High School in Bima City. The selection of this research location was based on several considerations: the limited availability of specific research data in the Bima region, the relevance of Muhammadiyah schools as representative research settings (Purwaningsih & Sumarmi, 2022), and the need for a contextual approach adapted to the socio-economic characteristics of West Nusa Tenggar (Hayati et al., 2025). It is expected that this study will provide empirical evidence to support the development of targeted and sustainable nutrition intervention programs.

## 2. LITERATURE STUDY

Research on adolescent nutritional status has developed significantly in recent years, particularly in relation to dietary patterns and physical activity as key determinants. Previous studies have consistently shown that adolescence is a critical phase characterized by rapid growth, requiring adequate and balanced nutrient intake. However, many adolescents experience nutritional problems such as undernutrition, anemia, overweight, and obesity. Studies by (Andya et al., 2022) and (Nordhagen et al., 2022) emphasize that inappropriate dietary behavior and imbalanced nutrient intake contribute significantly to poor nutritional status. Furthermore, national data reported by (Purwaningsih & Sumarmi, 2022) and (Fauziyyah et al., 2021) indicate the presence of a double burden of malnutrition among adolescents, where undernutrition and overnutrition coexist. These findings highlight that adolescent nutrition remains a major public health concern and requires continuous research attention.

Various approaches have been used in previous studies to assess adolescent nutritional status. Most studies apply quantitative methods with cross-sectional designs, utilizing anthropometric measurements such as

Body Mass Index (BMI) to classify nutritional status. Dietary intake is commonly assessed using 24-hour food recall methods, while physical activity is measured through structured questionnaires (Putri et al., 2025b). Some studies also incorporate lifestyle factors such as gadget use and sedentary behavior (Kumala et al., 2019). The strength of these approaches lies in their ability to provide a comprehensive overview of the relationship between dietary intake, physical activity, and nutritional status. However, limitations include reliance on self-reported data, which may lead to recall bias, and the inability of cross-sectional designs to establish causal relationships (Shair et al., 2023; Shen et al., 2023; Supadmi et al., 2024). Despite these limitations, such approaches remain widely used due to their practicality and efficiency in field research.

Although numerous studies have examined adolescent nutritional status, several gaps remain. First, most studies focus on large urban populations, with limited research conducted in specific regional contexts such as Bima City(Alkhair et al., 2024; Noris et al., 2023) . Second, previous research often examines dietary patterns or physical activity separately, rather than analyzing both variables simultaneously in relation to nutritional status. Third, there is limited empirical data addressing local socio-economic and cultural influences on adolescent nutrition, particularly in regions such as West Nusa Tenggara. Additionally, inconsistencies in findings across studies indicate the need for more localized and context-specific research. These gaps highlight the necessity for further investigation to better understand the determinants of adolescent nutritional status in specific settings.

This study offers a unique contribution by simultaneously analyzing food consumption patterns and physical activity in relation to adolescent nutritional status within a specific local context, namely Muhammadiyah Senior High School in Bima City. Unlike previous studies, this research integrates multiple variables, including nutrient intake, physical activity, and anthropometric measurements, to provide a more comprehensive understanding of adolescent nutrition. Furthermore, this study addresses the lack of empirical data in the Bima region and considers the socio-economic characteristics of West Nusa Tenggara. The findings are expected to contribute to the development of targeted and context-specific nutrition intervention programs, particularly in school settings, thereby advancing knowledge in the field of health research and supporting efforts to improve adolescent nutritional status.

## 3. MATERIAL AND METHOD

### 3.1. Research Design.

This study employed a quantitative research approach using a descriptive analytic design with a cross-sectional method. The cross-sectional design was chosen because it allows the researcher to observe and analyze the relationship between variables at a single point in time without follow-up. The study was conducted at Muhammadiyah Senior High School in Bima City. The selection of this location was based on accessibility, availability of respondents, and its relevance to the research objectives focusing on adolescent populations. This design is considered appropriate as it enables simultaneous assessment of food consumption patterns, physical activity, and nutritional status efficiently (Arief et al., 2025; Heny Purbaningsih, 2023; Khatimah, Nur Husnul, 2025; Nurahmawati et al., 2023).

### 3.2. Study Population

The target population in this study consisted of all students enrolled at Muhammadiyah Senior High School in Bima City. The sample size was 20 adolescents aged 16–19 years, including both male and female students. The sampling technique used was purposive sampling, where participants were selected based on specific criteria determined by the researcher. The inclusion criteria included: active students, within the adolescent age range (16–19 years), willing to participate by signing informed consent, and able to recall their dietary intake over the past 24 hours . The exclusion criteria included students who were ill or undergoing special diets that(Khatimah, Nur Husnul, 2025; Khatimah & Avila, 2023) could affect their dietary patterns. This sampling method ensured that the selected participants were relevant and capable of providing valid data.

### 3.3. Data Collection Procedures.

Data were collected using both primary and secondary sources. Primary data were obtained through direct measurement and interviews. Anthropometric measurements included body weight and height, measured using a digital scale and microtoise, respectively, to calculate Body Mass Index (BMI) (Pardamean et al., 2024). Dietary intake data were collected using the 24-hour food recall method to assess energy and nutrient consumption. Physical activity data were obtained through structured questionnaires covering type, frequency, and duration of daily activities. Secondary data were obtained from school records to support the research. The instruments used in this study were designed to ensure consistency and accuracy in data collection.

### 3.4. Data Analysis.

Data analysis was conducted in two stages: descriptive and analytical analysis. Descriptive analysis was used to present the distribution of respondent characteristics, dietary intake, physical activity, and nutritional status in the form of frequencies and percentages. Analytical analysis was performed using the Chi-Square ($x^2$) test to determine the relationship between dietary patterns and nutritional status. A significance level of $p \leq 0.05$ was used to indicate statistical significance . The collected data were processed and interpreted systematically to address the research objectives and identify patterns and relationships among variables. Example of Mean Calculation:

$$\bar{x} = (\Sigma x_i)/n \quad (1)$$

where $\bar{x}$ represents the mean value, $x_i$ represents each observation, and n represents the total number of observations.

## 4. RESULT AND DISCUSSION

### 4.1. Results

This study involved 20 student respondents who participated in the educational activity. Descriptive analysis was conducted to identify the demographic characteristics of participants, including gender and age distribution. Understanding respondent characteristics is important to provide an overview of the target population and to support the interpretation of the outcomes of the intervention. The demographic profile of the participants is presented in Table 1.

**Table 1. Respondent Characters**

| No | Variable | Categories | Frequency (n) | Present (%) |
|---|---|---|---|---|
| 1 | Gender | Male | 10 | 50 % |
| | | Women | 10 | 50 % |
| **Total** | | | 20 | 100% |
| 2 | Age | 16 Years | 2 | 10 % |
| | | 17 Years | 9 | 45 % |
| | | 18 Years | 4 | 20 % |
| | | 19 Years | 5 | 25 % |
| **Total** | | | 20 | 100% |

The distribution of respondents based on gender showed an equal proportion between males and females, each accounting for 50% of the total sample. Based on age, the majority of respondents were 17 years old (45%), followed by 19 years (25%), 18 years (20%), and 16 years (10%). This indicates that most respondents were in the mid-adolescent age group.

**Table 2. Average Energy Intake of Respondents**

| Nutrient content | Average intake | Adolescent AKG | %adequacy | Categories |
|---|---|---|---|---|
| Energy | 1700 kcal | 2375 kcal | 71,6% | Moderate deficit |
| Carbohydrates | 240 grams | 350 grams | 68,5% | Weight deficit |
| Protein | 45 Grams | 70 Grams | 64,2% | Weight deficit |
| Fat | 50 grams | 77.5 grams | 64,5% | Weight deficit |
| Iron | 10 mg | 13 mg | 76,9% | Moderate deficit |

The analysis showed that the average intake of energy and nutrients among respondents was below the Recommended Dietary Allowance (RDA). Energy and iron intake were categorized as moderate deficits, while carbohydrate, protein, and fat intake were classified as severe deficits. These findings indicate that respondents' daily nutritional requirements were not adequately met.

**Table 3. Distribution of Nutrient Adequacy Levels**

| Nutrient content | Less n (%) | Simply n (%) | More n (%) | Total |
|---|---|---|---|---|
| Energy | 15 (75%) | 4 (20%) | 1 (5%) | 20 (100%) |
| Carbohydrates | 16 (80%) | 4 (20%) | 0 (0%) | 20 (100%) |
| Protein | 14 (70%) | 4 (20%) | 2 (10%) | 20 (100%) |
| Fat | 13 (65%) | 5 (25%) | 2 (10%) | 20 (100%) |
| Iron | 18 (90%) | 2 (10%) | 0 (0%) | 20 (100%) |

The distribution of nutrient adequacy levels revealed that the majority of respondents were in the deficient category, particularly for iron, carbohydrates, and energy. This finding highlights a general tendency toward inadequate nutrient intake among respondents.

**Table 4. Respondents' Food Consumption Patterns**

| Variable | Categories | Frequency (n) | Percentage (%) |
|---|---|---|---|
| Feeding Frequency | 3 times/day | 8 | 40% |
| | 2 times/day | 9 | 45% |
| | < 2 times/day | 3 | 15% |
| Snack Consumption | Yes | 15 | 75% |
| | No | 5 | 25% |
| Consumption of Animal Protein | Enough | 6 | 30% |
| | Less | 14 | 70% |
| Vegetable Consumption | Routine | 7 | 35% |
| | Not routine | 13 | 65% |
| Fruit Consumption | Routine | 5 | 25% |
| | Not routine | 15 | 75% |
| Habit of Skipping Meals | Yes | 11 | 55% |
| | No | 9 | 45% |

Table 4 present the dietary patterns of respondents generally did not meet the principles of balanced nutrition. This was reflected in irregular meal frequency, low consumption of animal protein sources, and insufficient intake of vegetables and fruits. In addition, skipping main meals was common among respondents.

**Table 5 Nutritional Status Based on Respondents' BMI**

| Nutritional status categories | Frequency (n) | Presentation (%) |
|---|---|---|
| Skinny | 3 | 15% |
| Skinny (Heavy) | 1 | 5% |
| Normal | 11 | 55% |
| Overweight | 4 | 20% |
| Obesity | 2 | 10% |
| **Total** | **20** | **100%** |
| **Skinny** | **3** | **15%** |

Most respondents had a normal nutritional status. However, underweight and overweight/obese conditions were still identified, indicating the presence of a double burden of malnutrition within the study population.

**Table 1.6 Relationship between Diet and Nutritional Status**

| Diet | Underweight n (%) | Normal n (%) | Overweight/Obesity n (%) | Total n (%) |
|---|---|---|---|---|
| Good | 1 (5.0%) | 6 (30.0%) | 1 (5.0%) | 8 (40.0%) |
| Poor | 3 (15.0%) | 5 (25.0%) | 5 (25.0%) | 12 (60.0%) |
| Total | 4 (20.0%) | 11 (55.0%) | 6 (30.0%) | 20 (100.0%) |

Table 1.6 shows the relationship between dietary patterns and nutritional status among respondents. Among participants with a good diet, most had normal nutritional status (30.0%), while only 5.0% were underweight and 5.0% were overweight/obese. In contrast, among respondents with a poor diet, 25.0% had normal nutritional status, 15.0% were underweight, and 25.0% were overweight/obese. Overall, normal nutritional status was the most common category (55.0%), followed by overweight/obesity (30.0%) and underweight (20.0%). These findings suggest that poorer dietary habits were associated with a higher proportion of both underweight and overweight/obesity conditions compared with respondents who reported good dietary practices.

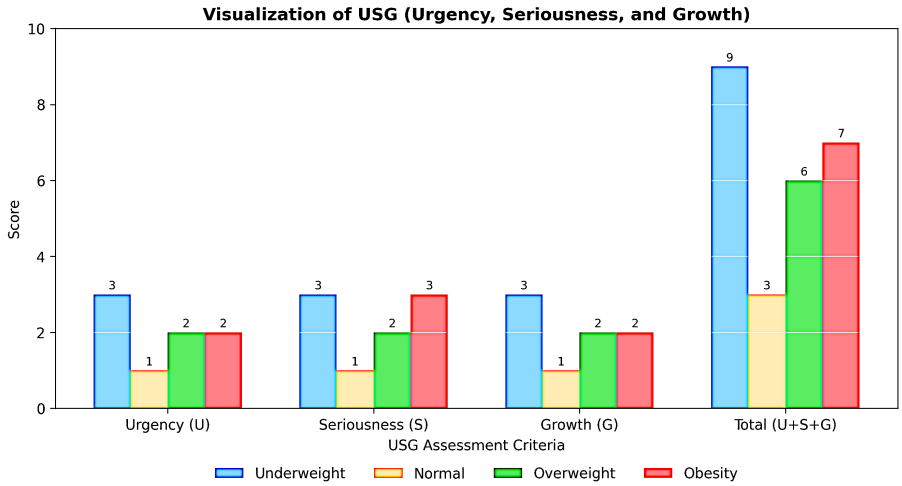


**Figure 1. Prioritization of nutritional problems based on the USG (Urgency, Seriousness, and Growth) analysis among respondents.**

Figure 1 presents the results of the USG (Urgency, Seriousness, and Growth) analysis used to prioritize nutritional problems among respondents. Undernutrition (underweight) emerged as the highest-priority issue with a total score of 9 (U = 3, S = 3, G = 3), indicating that it is highly urgent, has significant health consequences, and possesses considerable potential for future progression if left unaddressed. Obesity ranked as the second priority with a total score of 7 (U = 2, S = 3, G = 2), reflecting its substantial impact on health and its association with an increased risk of non-communicable diseases. Overweight was classified as a moderate-priority problem with a total score of 6 (U = 2, S = 2, G = 2), as it may progress to obesity and contribute to adverse health outcomes. In contrast, normal nutritional status obtained the lowest score of 3 (U = 1, S = 1, G = 1), indicating that it is not considered a nutritional problem, although preventive measures remain important to maintain optimal health conditions. Overall, these findings suggest that interventions should primarily focus on reducing undernutrition while simultaneously addressing obesity and overweight through nutrition education, improved dietary practices, and increased access to balanced and nutritious foods.

## 4.2. Discussion

Based on the results of this study conducted among adolescents at Muhammadiyah Senior High School in Bima City, it was found that respondents' dietary patterns were generally not in accordance with the principles of balanced nutrition. The findings indicate that although rice was commonly consumed as the main source of carbohydrates, it was not complemented by adequate diversity of side dishes, particularly animal protein sources. In addition, the intake of vegetables and fruits, which are

essential sources of vitamins and minerals, was relatively low (Hayati et al., 2025; Rusliani et al., 2022). This pattern was further exacerbated by the frequent consumption of snacks such as biscuits, instant noodles, and other processed foods that are high in energy but low in nutritional value. Consequently, the overall quality of dietary intake among respondents was suboptimal, both in terms of quantity and nutritional adequacy.

The analysis of nutrient adequacy revealed that most respondents were classified as deficient, particularly in iron, energy, carbohydrates, and protein intake. Low iron intake was a major concern, as it may increase the risk of anemia, which can negatively affect immune function, cognitive performance, and academic achievement. This condition may be attributed to the low consumption of animal-based iron sources and inadequate intake of vitamin C-rich foods that enhance iron absorption. Similarly, insufficient energy and carbohydrate intake may lead to impaired growth, weight loss, and reduced physical performance, especially during adolescence, which is a critical period of rapid growth and development (Nurahmawati et al., 2023; Nurbaniy, 2023; Supadmi et al., 2024).

Protein intake among respondents was also predominantly inadequate, largely due to the dominance of plant-based protein consumption and limited intake of animal protein. Although plant-based proteins are beneficial, their biological value is lower compared to animal proteins due to incomplete essential amino acid profiles. This imbalance may affect tissue growth and maintenance. In contrast, fat intake showed more variation, with some respondents experiencing deficiencies while others had excessive intake, likely due to the consumption of fried and high-fat processed foods. This imbalance reflects heterogeneity in dietary habits and contributes to variations in nutritional status (Prihandini et al., 2022).

In terms of nutritional status, most respondents were classified as having normal BMI; however, cases of underweight, severe underweight, overweight, and obesity were also identified. This finding indicates the presence of a double burden of malnutrition, where undernutrition and overnutrition coexist within the same population. This phenomenon is increasingly common among adolescents due to lifestyle transitions, including unhealthy dietary habits and reduced physical activity.

The statistical analysis further demonstrated a significant relationship between dietary patterns and nutritional status ($p < 0.05$), indicating that diet is a key determinant of adolescent nutritional status. Adolescents with balanced and regular dietary patterns were more likely to have normal nutritional status, whereas irregular and nutritionally inadequate diets were associated with both undernutrition and overnutrition. In addition to dietary factors, other determinants such as physical activity, nutritional

knowledge, and social environment also play important roles in influencing nutritional status.

Furthermore, the USG (Urgency, Seriousness, Growth) analysis identified undernutrition as the highest priority problem requiring immediate intervention, due to its high prevalence and significant impact on adolescent growth and development. Overweight was categorized as a moderate priority, highlighting the need for preventive measures to avoid progression into obesity and related non-communicable diseases.

Overall, the findings of this study emphasize that inadequate dietary patterns are the primary factor contributing to low nutrient adequacy and suboptimal nutritional status among adolescents. Therefore, comprehensive interventions are needed, including nutrition education, promotion of balanced diets, and the establishment of healthy lifestyle behaviors in both school and family settings. School-based programs such as nutrition counseling, health campaigns, and integration of nutrition education into the curriculum can be effective strategies. Additionally, family involvement is crucial in shaping healthy eating habits. Despite these findings, this study has limitations, including the use of a 24-hour food recall method that may be subject to recall bias and may not fully represent habitual intake. Future research is recommended to involve larger sample sizes and more comprehensive dietary assessment methods to obtain more accurate results.

## 4.3. CONCLUSION

Based on the results of the research that has been conducted on the relationship between food consumption patterns and the nutritional status of adolescents at SMA Muhammadiyah Kota Bima, it can be concluded that the respondents' food consumption patterns in general still do not meet the principles of balanced nutrition. This can be seen from the results of data collection using the 24-hour food recall method which shows that most respondents consume staple foods in the form of rice as the main source of carbohydrates with sufficient frequency, but are not balanced with adequate variety of side dishes and low consumption of vegetables and fruits. In addition, respondents also showed a high tendency to consume snacks such as instant noodles, biscuits, and other processed foods that have high energy content but are low in micronutrients. This condition indicates that the quality of adolescent food consumption patterns is still relatively low, both in terms of diversity and nutritional balance.

Furthermore, based on the results of the analysis of the level of nutrient adequacy, it was found that most of the respondents were in the category of deficient for several important nutrients, namely energy,

carbohydrates, proteins, fats, and especially iron. Low iron intake indicates a potential risk of anemia in adolescents, which can have an impact on decreased study concentration, endurance, and productivity. In addition, low energy and protein intake also shows that the macronutrient needs of respondents have not been met optimally, which can interfere with the growth and development process in adolescence. Nutrient deficiencies that occur continuously have the potential to cause more serious health problems if not treated immediately.

In terms of nutritional status, the results of the study showed that most of the respondents had normal nutritional status. However, respondents were still found with abnormal nutritional status, both in the categories of thin, severely thin, overweight, and obese. The existence of this variation in nutritional status shows an imbalance between nutrient intake and body needs in respondents. Respondents with poor nutritional status generally had insufficient energy and nutrient intake, while respondents with nutritional status were more likely to have excess energy intake that was not balanced by adequate physical activity. This condition reflects the existence of complex nutritional problems in adolescents, which are not only related to nutrient deficiencies, but also excess energy intake.

This phenomenon also shows the existence of a *double burden of malnutrition*, namely the occurrence of malnutrition problems and overnutrition simultaneously in one population group. This condition is one of the main challenges in the field of public health, especially in adolescents who are in a period of rapid growth and development. Changes in diet and lifestyle, such as increased consumption of fast food and low physical activity, are the main factors that contribute to the occurrence of this phenomenon. Therefore, special attention is needed in efforts to handle nutritional problems in adolescents so that they do not develop into more serious health problems in the future.

The results of statistical analysis using the Chi-Square test showed that there was a significant relationship between diet and nutritional status of respondents, with a p value of $< 0.05$. This shows that diet is a factor that has a real effect on the nutritional status of adolescents. Respondents with a good diet tended to have normal nutritional status, while respondents with a more or less normal diet were found in the category of abnormal nutritional status. Thus, it can be concluded that unbalanced food consumption patterns that do not meet nutritional needs play an important role in the occurrence of nutritional problems in adolescents.

In addition to diet, this study also shows that other factors such as physical activity, nutritional knowledge, and social environment also affect the nutritional status of adolescents. Adolescents with low physical activity tend to have a higher risk of being overweight and obese, especially when

balanced with a high-energy diet. In contrast, adolescents with high physical activity but low energy intake are at risk of energy deficiency and poor nutritional status. Therefore, efforts to improve nutritional status are not only focused on improving the quality of diet, but also need to consider other factors that contribute to energy balance.

Based on the results of the analysis of problem priorities using the ultrasound (*Urgency, Seriousness, Growth*) method, it was found that the problem of malnutrition is the main priority that needs to be addressed immediately. This is due to the high level of urgency, seriousness of impact, and potential development of problems that can significantly affect adolescent health and growth. Meanwhile, the problem of overweight is included in the medium priority category that still needs attention as a preventive effort so that it does not develop into obesity. Normal nutritional status is not included in the priority problem, but it still needs to be maintained through promotive and preventive efforts.

Overall, this study shows that food consumption patterns that are not in accordance with the principles of balanced nutrition are the main factors that affect the low level of nutritional adequacy and nutritional status of adolescents. Therefore, comprehensive and sustainable intervention efforts are needed to improve food consumption patterns and improve the nutritional status of adolescents. These interventions can be carried out through nutrition education in the school environment, increasing adolescents' awareness of the importance of healthy eating, and support from families in providing nutritious and balanced food.

With these efforts, it is hoped that adolescents can have a better diet, so that they are able to meet daily nutritional needs and achieve optimal nutritional status. In addition, improving the nutritional status of adolescents is also expected to improve the quality of health, learning ability, and productivity in the future. Therefore, this study makes an important contribution in providing an overview of the condition of food consumption patterns and nutritional status of adolescents, as well as being the basis for the preparation of more effective and targeted intervention programs.

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