Breakfast Habits And Nutritional Status On Students In Muhammadiyah 1 Junior High School Of Minggir

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Abstract

Purpose: Adolescents in Yogyakarta still have nutrition problems, namely secere thinness, thinness, overweight, and obesity. One of the factors that influence nutritional status in adolescents is breakfast habits. This research aims to determine the relationship between breakfast habits and nutritional status among students in Muhammadiyah 1 Junior High School of Minggir.
Method: The research used a cross-sectional study design. Subjects for this research are students in Muhammadiyah 1 Junior High School of Minggir who aged 15-18 years old. Breakfast habits were obtained using a questionnaire. Nutritional status was obtained from direct measurements of height and weight then calculated BNI-for-age WHO AnthroPlus software and presented in z-score form. Data analysis used rank Spearman test with $\rho<0.05$.
Results: Prevalence of thin and overweight was 23%. Most of the students have breakfast habits 1-5 times/week (61.5%). Student with breakfast habits 1-2 times/week have poor nutritional status (25%) and breakfast habits 3-5 times/week have overweight nutritional status (25%). However, most of the students with 1-2 times/week breakfast habits have normal nutritional status (75%). There was no significant relationship between breakfast habits and nutritional status among students in Muhammadiyah 1 Junior High School of Minggir.
Keywords: Nutritional status, breakfast habits, students, adolescents

Introduction

Based on Body Mass Index for Age (BMI-for-age), 5.5% of adolescents in Sinamangal, Nepal were found to be moderately undernourished and 2.6% were severely undernourished. Furthermore, the percentage of adolescents who were moderately underweight was 13.0% and severely underweight were 1.3% [1]. In Indonesia, the national prevalence (2023) based on BMI-for-age for adolescents aged 16-18 years old showed that nutritional status for undernutrition such as severe thinness and thinness was 8.3% and for overnutrition namely overweight and obesity was 12.1%. Meanwhile, in Daerah Istimewa Yogyakarta (DIY) Province, 12.8% of adolescents were severe thinness and thinness as well as 19.1% were overweight and obesity [2]. This condition indicates the prevalence of variations in nutritional status.

Nutritional status reflects the extent to which an individual's physiological needs of nutrients have been covered [3]. Nutritional status is determined through anthropometric examination results in the form of height and weight. Indicators of nutritional status assessment in children aged 5-19 years can be determined by measuring Body Mass Index for Age (BMI-for-age), there are five categories of nutritional status, namely severe thinness (z-score ≤-3 SD), thinness (z-score -3 SD to <-2 SD), normal (z-score -2 SD to +1 SD), overweight (z-score >+1 SD to +2 SD), and obesity (z-score >+2

SD) [4]. If metabolic needs are consumed in an imbalanced manner, deficient or excessive, the individual will have a suboptimal nutritional status and nutritional problems. These nutritional problems need attention because they have the potential to have a serious impact on the health and growth of adolescents.

Being malnourished can cause problems with adolescents health, body, mind, intelligence, and social relationships [5]. In adolescents, overweight and obesity are serious problems that can continue into adulthood and increase the risk of metabolic and degenerative diseases such as heart disease, diabetes, and cancer. In addition, it will impact health that can interfere with quality of life such as sleep problems and respiratory disorders [6]. Besides, nutritional problems can lead to decreased immunity, increase the risk of infection, and affect the body's ability to recover from illness or injury, posing additional risks, including suboptimal physical growth and development [7]. In general, nutritional problems can arise due to several different factors.

The nutritional problems in adolescents can be caused by several factors, including breakfast patterns, parenting patterns, infectious diseases, family economic income levels, and education and knowledge levels [8]. One of the factors that indirectly affects nutritional status is breakfast habits. Breakfast is considered a very important meal as it not only fulfills the body's energy needs, but also helps in the absorption of necessary nutrients. In Indonesia, the prevalence of school children who do not eat breakfast is 41.2-54.5% [9]. Furthermore, based on the results of research conducted in Yogyakarta, the prevalence of children who do not eat breakfast is 59% [10].

Breakfast can provide about 20-25% of the total energy needs throughout the day and is one of the factors that contribute to achieving a balanced diet [11]. Since breakfast has a close relationship with a healthy diet, it is a very important time to maintain energy balance in the body. People who skip breakfast are more likely to feel hungry quickly and will eat a large portion when they encounter food [8]. Research shows that 17.1% of adolescents who do not have breakfast habits are overweight [8]. Therefore, breakfast can also be considered a preventive strategy to reduce the risk of obesity [12].

Based on the description above, breakfast habits can affect the nutritional status among students. Besides that, based on the preliminary observations, there are still many students in Muhammadiyah 1 Junior High School of Minggir who do not have breakfast before going to school. This Study aims to analyze the relationship between breakfast habits and nutritional status among students in Muhammadiyah 1 Junior High School of Minggir.

Methods

This study was an observational analytic with a cross-sectional design which was conducted on July 11, 2023. A total of students in Muhammadiyah 1 Junior High School of Minggir aged 15-18 years old have participated in this study. Subjects were selected by using total sampling technique. The inclusion criteria for the samples were students who studied in the 9th grade of F class in Muhammadiyah 1 Minggir and students who were aged between 10-19 years old at that moment to be categorized as adolescents. The exclusion criteria were enforced when the samples did not fulfill the inclusion criteria.

Data on breakfast habits was obtained using a questionnaire. The questionnaire on breakfast habits contains one question with four options namely value 1 for breakfast every day, value 2 for breakfast 2-3 times per week, value 3 for breakfast 1-2 times per week, and value 4 for never have breakfast. Data on nutritional status was obtained from direct measurements of height and weight. The height data was measured using a

stadiometer and weight data was measured using a body scale. The stadiometer has accuracy until 0.1 cm. The students were measured in minimal clothing with bare heads and feet, standing straight, arms hanging loosely to the side, feet together with heels, buttocks, and shoulder blades in contact with the vertical surface of the stadiometer. The body scale that was used to measure had accuracy until 0.1 kg. The body scale was put on the hard flat surface then students stepped onto the scale with light clothing without footwear, standing still with their heads straight and arms hanging loosely to the side.

BMI-for-age was calculated using WHO AnthroPlus software and presented in z-score form. In this research, BMI-for-age was categorized into four categories namely severe thinness (≤-3 SD), thinness (-3 SD to <-2 SD), normal (-2 SD to +1 SD), and overweight (>+1 SD to +2 SD). Data analysis used rank Spearman test with $\rho<0.05$.

Results

There were 26 students aged 15-18 years old, most of them were male (61.5%) and aged 16 years old (65.4%). Based on their height, the majority of students had a height >160 cm (50%). In terms of body weight, most of them weighed <50 kg (73.1%). Based on the breakfast habits, the data was obtained by approximate frequency in a week, most students had breakfast frequency in a week as many as 1-2 times and 3-5 times with the value was 8 students (30.8%) in each category. Meanwhile, depending on the nutritional status based on the z-score value by BMI-for-age, 18 students (69.2%) had normal status. The completed data is presented in Table 1.

Table 1. Distribution of Student's Characteristics

Characteristics	N = 26	
	Frequency (N)	Percentage (%)
Sex		
Male	16	61.5
Female	10	38.5
Age		
15 years old	5	19.2
16 years old	17	65.4
17 years old	2	7.7
18 years old	2	7.7
Height		
<150 cm	3	11.5
150–160 cm	10	38.5
>160 cm	13	50.0
Body Weight		
<50 kg	19	73.1
50–60 kg	3	11.5
>60 kg	4	15.4
Breakfast Habits in a Week		
Never	4	15.4
1-2 times	8	30.8
3-5 times	8	30.8
Every day	6	23.1
Nutritional Status Category (BMI-for-age)		
Severe thinness	3	11.5

Thinness	2	7.7
Normal	18	69.2
Overweight	3	11.5

Based on Table 2, there is no significant relationship between breakfast habits and nutritional status with a p-value of 0.065 (p-value >0.05). However, there is student who have breakfast every day with an overweight nutritional status (16.7%), students who have breakfast 3-5 times a week still have malnutrition namely severe thinness and thinness (25%) as well as overweight (25%). Similarly, students who have breakfast 1-2 times a week have severe thinness nutritional status (25%).

Table 2. The Relationship between Breakfast Habits and Nutritional Status among Students

Breakfast Habits	Severe thinness		Thinness		Normal		Overweight		ρ
	N	%	N	%	N	%	N	%	
Every day	0	0.0	0	0.0	5	83.3	1	16.7	0.065
3-5 times a week	1	12.5	1	12.5	4	50.0	2	25.0	
1-2 times a week	2	25.0	0	0.0	6	75.0	0	0.0	
Never	0	0.0	1	25.0	3	75.0	0	0.0	

Discussion

In class 9F, there were 26 students with the majority of male students. The gender of the students might affect their nutritional status because of differences in motivation and eagerness. Female students tend to show lack of enthusiasm when it comes to doing physical activities [13]. Imbalance nutrient intake and physical activity can lead to malnutrition, the high levels of physical activity with low intake can impact as underweight while low levels of physical activity and high level of nutrient intake can cause overweight [14].

In terms of student's age, most of the students were 16 years old when measurements were conducted. Adolescence is a crucial phase between childhood and adulthood, from ages 10 to 19 which requires a lot of nutrient intakes to fulfill nutrition needs for their rapid growth and development through this period [15] . In a study, adolescents who were 16 years old were 2 times more likely to be obesity [16].

According to the frequency of breakfast habits collected using the questionnaire, 12 children answered that they never or rarely (1-2 times a week) had breakfast. Half of the children said that the reason they never or rarely had breakfast was due to time constraints in the morning which caused them not to have time to have breakfast because they had to go to school immediately. From the answers to the questionnaire that have been presented, the limited time in the morning before going to school that causes children not to have time to have breakfast can be overcome by the habit of waking up earlier and going to bed earlier the night before, if the sleep pattern is appropriate and sufficient this reason can be overcome

In addition, two children said that there was no breakfast available at home, which affected their access to food, three others said that they had no appetite in the morning, and one said that they were not used to eating breakfast. For limited access to food that causes the unavailability of breakfast at home still has a close relationship with the reasons for children who are not accustomed to breakfast. In a study, there are factors that

influence the unavailability of breakfast at home, namely low economic, and working parents, parents are too busy [17].

Breakfast itself provides the right energy to enable the achievement of optimal concentration while at school which has an impact on improving children's learning achievement [18]. In addition, the habit of not eating breakfast will also make children have no appetite in the morning. A regular morning diet will make the body more responsive in regulating hunger in the body which causes children's appetite to increase in the morning. Skipping breakfast has a negative impact on the body. Breakfast has a close relationship with mental intelligence because food intake in the morning can increase brain activity such as intelligence, sensitivity, and ability to concentrate [19]. Despite this, the results of this study showed that breakfast habits did not influence nutritional status. Most students have normal status although they are rare or never had breakfast.

According to this study there is no significant relationship between breakfast habits and nutritional status ($p > 0.05$). These results are in accordance with the previous study of [20] which stated there is no significant relationship between breakfast frequency and nutritional status. Breakfast is not the only factor that can affect nutritional status, there are other factors such as food quality, knowledge, income, and environment. However, the results of this study are the opposite with study of [18] which stated there is a relationship between breakfast habits and nutritional intake in SMP Negeri 5 Banyuwangi. The difference in the result can be caused by the differences in food quality intake during breakfast. The good quality of breakfast or being in accordance with guidelines for balanced nutrition can affect nutritional status due to a good intake can support the growth and development of teenagers better. Besides that, breakfast with all of the food group combinations can have a satiating effect and influence nutritional status [21].

This study still has limitations that future researchers can consider to achieve better research results. For the future research can be applied to larger population. Future research can consider expanding the scope of breakfast habit variables to detail the food groups which were consumed by the respondents instead of just frequency of breakfast habits. Therefore, the nutrient intake whether macronutrients or micronutrients can accurately show the relationship between breakfast habits and nutritional status.

Conclusion

Most of the students have normal nutritional status and have breakfast habits 1-2 and 3-5 times a week. There is no significant relationship between breakfast habits and nutritional status. Even so, students should still make a habit of eating breakfast regularly to help fulfill the initial energy to start activities and concentrate at school.

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Author Contributions

Four authors have been involved in making this article. The first author is Yaya Fauzia who has contributed for collecting the data of this research, writing methods, and writing some part of the abstract, introduction, result, discussion, and acknowledgment. The second author is Hanifah Rahmawati who has contributed to collecting data for this

research, writing some parts of abstract, results, discussion, and author contribution. The third author is Aulia Ramdani who has contributed to writing some part of the abstract, introduction, conclusion, and references. Meanwhile, the last author is Dittasari Putriana who has been involved as a preceptor for correcting the article which has been finished.

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