



The Relationship Between Body Image and Mindful Eating with Nutritional Status in Adolescents at SMAN 8 Cirebon City

Fara Fadya Azzahra Nurizqy*¹, Muhammad Duddy Satrianugraha², Ignatius Hapsoro Wirandoko³

Universitas Swadaya Gunung Jati, Indonesia

Email: farafadyaa@gmail.com*, biolibium@gmail.com,

ignatiushapsorowirandoko@gmail.com

KEYWORDS	ABSTRACT
body image, mindful eating, nutritional status, adolescents	Adolescence is a period of rapid physical, psychological, and social changes that may increase the risk of nutritional problems. Body image and mindful eating are internal factors that can influence adolescents' nutritional status. Negative body image may encourage unhealthy eating behaviors, while mindful eating can help regulate eating habits through awareness of hunger, fullness, and the eating process. However, evidence on the relationship between body image, mindful eating, and adolescent nutritional status in Indonesia remains limited. This study aims to determine the relationship between body image, mindful eating, and nutritional status in adolescents at SMAN 8 Cirebon City. This research is an analytical observational study with a cross-sectional approach. The sample consisted of 11th-grade students at SMAN 8 Cirebon City. Statistical analyses included Spearman's correlation test and logistic regression. Most respondents had a positive body image (83.3%), high mindful eating (55.1%), and normal nutritional status (52%). There was a significant relationship between body image and nutritional status (p -value < 0.001), while no significant relationship was found between mindful eating and nutritional status (p -value = 0.378). The regression results showed that body image was the most influential factor on nutritional status (OR = 4.64). Body image is significantly associated with nutritional status in adolescents and is the most influential factor in this study. In contrast, mindful eating did not show a significant relationship with nutritional status in adolescents.

INTRODUCTION

Adolescence is an important early stage in contributing to the quality of the next generation. Adolescents who grow well, especially in terms of health, will play a role in shaping a more qualified generation. The welfare of adolescents is the key to improving the quality of life between generations (Rahayu & Hindarta, 2023). Rapid physical growth and significant psychological changes make the nutritional needs of adolescents also increase. This condition makes adolescents a group at risk of facing nutritional problems. World Health Organization (WHO) states that about 1.2 billion adolescents in the world face nutritional problems, which manifest in three conditions: malnutrition, deficiency or excess of micronutrients, and overweight or obesity (WHO, 2018). Based on reports from Food and Agriculture Organization (FAO), the number of people experiencing malnutrition globally reached 768 million people

in 2020. This shows an increase of 18.1% compared to the previous year, which was 650.3 million people (Happy, 2020).

Adolescence is an important period in life marked by various physical, emotional, psychological and social changes. In this phase, individuals often begin to form a self-identity, including their perception of their body or known as body image (Pato et al., 2022). The positive one appears when a person feels satisfied with his body, while negative body image arises from dissatisfaction with body shape. Body image can support mental and physical health, while negative body image often causes problems such as feelings of shame, anxiety, and difficulty accepting yourself. They also tend to be sensitive to praise, criticism, and be pessimistic (Marlina & Ernalina, 2020). Someone who has a negative body image tends to eat unbalanced foods (Dewi et al., 2023).

The problem of malnutrition in adolescents is becoming a global trend due to dietary changes that lead to the consumption of foods high in sugar, fat, and calories, as well as a lack of physical activity (WHO, 2018). One approach that can help teens form a healthy relationship with their food and body is mindful eating. Mindful eating is a practice that involves emotions and all the five senses while eating. This practice is beneficial for managing weight, increasing awareness of the use of the senses when eating, and being more responsive to the body's signals related to hunger and fullness. By applying mindful eating, adolescents can learn to appreciate food more and improve their relationship with the body. This can ultimately play a role in improving better nutritional status (Wijaya & Adi, 2024).

Several previous studies have examined the relationship between body image, eating behavior, and nutritional status (Havdal et al., 2021). Marlina and Ernalina (2020) found a significant relationship between body image perception and adolescent nutritional status, indicating that dissatisfaction with body shape may be associated with abnormal nutritional status. Zahrah and Muniroh (2020) also reported that adolescents with abnormal nutritional status, especially overnutrition, tend to have more negative body image. Furthermore, Komarudin et al. (2023) found that body image and weight-loss diet behavior were associated with nutritional status among female college students. More recently, Kurniasih et al. (2024) showed that body image significantly influenced nutritional status among adolescents in Cirebon, suggesting that body perception is an important determinant of adolescent nutrition.

Research on mindful eating has shown mixed findings. Dewi et al. (2023) explored the relationship between body image, mindful eating, and nutritional status in students of an Islamic boarding school and showed that eating behavior and body perception are relevant factors in nutritional health. (5) Wijaya and Adi (2024) examined mindful eating and sleep quality in university students and found that mindful eating may contribute to healthier eating awareness, although its direct relationship with nutritional status was not always significant. (6) Maharani (2024) also found no clear association between mindful eating and nutritional status among adolescents, indicating that other variables such as family environment, stress, physical activity, and socioeconomic status may also play an important role.

Although a number of studies have discussed body image and mindful eating separately, research that examines both variables simultaneously in relation to adolescent nutritional status, especially among senior high school students in Indonesia, is still limited (Bacalhau et al., 2025; Jacob & Panwar, 2023; Khoshkerdar & Raeisi, 2020). In particular, evidence from Cirebon City remains scarce. This gap is important because adolescents' eating behavior and

body perception may differ according to local social, economic, educational, and cultural contexts (Desbouys et al., 2020; Havdal et al., 2021). Thus, studying these variables in a specific school setting is necessary to provide contextual evidence and support appropriate adolescent nutrition interventions.

This study has novelty in analyzing the relationship between body image and mindful eating simultaneously with nutritional status among adolescents at SMAN 8 Cirebon City, and in identifying which factor is more dominant in influencing nutritional status. The findings are expected to enrich the scientific literature on adolescent nutrition, particularly from a psychosocial perspective. Therefore, this study aims to determine the relationship between body image and mindful eating with nutritional status in adolescents at SMAN 8 Cirebon City. Theoretically, this study is expected to contribute to the development of knowledge regarding psychosocial determinants of adolescent nutritional status. Practically, the findings may serve as useful input for schools, parents, and health professionals in designing nutrition education, body positivity promotion, and healthy eating behavior interventions to improve adolescent nutritional outcomes.

METHOD

This study was an analytical observational study with a cross-sectional approach, conducted from May to June 2025 at SMAN 8 Cirebon City. The cross-sectional approach was chosen because it allowed data to be collected at a single point in time to examine the relationships between variables simultaneously.

The population in this study consisted of all grade XI students at SMAN 8 Cirebon City, totaling 180 students. The sampling technique used total sampling with the following inclusion criteria: students were willing to participate as respondents by signing an informed consent form, did not have a history of chronic diseases such as diabetes or endocrine disorders, and did not have eating disorders diagnosed by medical professionals. Respondents who did not complete the questionnaire or did not follow standard procedures for measuring nutritional status were excluded from the final analysis.

Data collection was carried out by administering two types of questionnaires and conducting one set of physical measurements. Perception of body image was measured using a shortened version of the Body Shape Questionnaire (BSQ), which had been adapted and validated, with results categorized as positive or negative based on median scores. Mindful eating patterns were measured using the Mindful Eating Questionnaire (MEQ), which consisted of several subscales such as awareness, impulse control, and emotional response, with final classifications of high and low mindful eating. Nutritional status was measured based on Body Mass Index-for-Age (BMI-for-age).

Height and weight were measured using standardized instruments, and BMI was calculated using the formula: body weight (kg) divided by height squared (m²). The results were then compared to the WHO growth reference for adolescents and categorized as undernutrition, normal nutritional status, or overnutrition.

The data were analyzed using univariate analysis to describe the frequency distribution of each variable. The relationships between body image, mindful eating, and nutritional status were analyzed using Spearman's correlation test due to the ordinal scale of the data. To identify the factors that most influenced nutritional status, logistic regression analysis was performed.

All analyses were conducted using the latest version of SPSS software, and the level of significance was set at $p < 0.05$.

RESULTS AND DISCUSSION

Research Characteristics

The subject of this study is a 11th grade student of SMAN 8 Cirebon City. The number of subjects studied was 198 students. The characteristics of the subjects studied were gender, age, paternal education, maternal education, and parental income. The distribution of respondent characteristics is presented in the following table.

Table 1. Characteristics of respondents

	Quantity (n)	Present (%)
Gender		
Male	81	40,9
Women	117	59,1
Age		
15 Years	6	3,0
16 Years	72	36,4
17 Years	120	60,6
Father's Education		
Not finishing school	6	3,0
Graduated from Elementary School/Equivalent	35	17,7
Graduated from junior high school/equivalent	49	24,7
Graduated from high school/equivalent	47	23,7
Pass D3/D4/S1/S2	61	30,8
Mother's Education		
Not finishing school	4	2,0
Graduated from Elementary School/Equivalent	40	20,2
Graduated from junior high school/equivalent	60	30,3
Graduated from high school/equivalent	47	23,7
Pass D3/D4/S1/S2	47	23,7
Parental Income		
<Rp. 2 million per month	138	69,7
IDR 2-10 million per month	55	27,8
>10 million per month	5	2,5
Total	198	100,0

Source: Primary data processed by the researcher (2025)

Based on the table above, the majority of research subjects are female as much as 59.1%. Most were 17 years old with a lot of 60.6%. The father's last education was dominated by

D3/D4/S1/S2 graduates as much as 30.8%, while the mother's last education was 30.3% graduates of junior high school/equivalent. Parents' income is at most < Rp. 2 million per month, which is 69.7% of respondents.

Univariate Analysis

Overview of Nutritional Status

The picture of nutritional status is known from the results of anthropometric measurements of body weight (BB) and height (TB), obtained results of 52% of adolescents having normal nutritional status, while respectively for undernutrition status, overnutrition and obesity are 41.4%, 3%, and 3.5%.

Table 2. Overview of nutritional status

Variable	Quantity (n)	Present (%)
Nutritional Status		
Malnutrition	82	41,4
Normal nutrition	103	52,0
More nutrition	6	3,0
Obesity	7	3,5
Total	198	100,0

Source: Primary data processed by the researcher (2025)

Body image overview

Based on the results of data collection using a body image questionnaire on the respondents, the results showed that 83.3% of respondents had a positive body image and as many as 16.7% of respondents had a negative body image.

Table 3. Overview Body image

Variable	Quantity (n)	Present (%)
Body Image		
Negatives	33	16,7
Positive	165	83,3
Total	198	100,0

Source: Primary data processed by the researcher (2025)

Mindful eating overview

Based on the results of the measurement using the mindful eating behavior scale questionnaire, based on mindful eating, the most respondents with high mindful eating are 55.1%.

Table 4. Mindful eating overview

Variable	Quantity (n)	Present (%)
<i>Mindful eating</i>		
Low	89	44,9
Height	109	55,1

Total	198	100,0
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Source: Primary data processed by the researcher (2025)

Bivariate Analysis

The Relationship between Body Image and Nutritional Status in Adolescents

Based on the spearman test, it was shown that there was a relationship between body image and nutritional status in adolescents at SMAN 8 Cirebon City. The results of the spearman test showed that a significant value of p-Value <0.001 which means a p-Value value of <0.05, then an alternative hypothesis (Ha) was accepted. The value of the correlation coefficient (r) was obtained as -0.277 which shows that there is a negative correlation with a weak relationship, which can be interpreted that the more negative the body image, the more abnormal the nutritional status tends to be (either in the form of malnutrition or overnutrition). In the context of this study, although the majority of respondents had normal nutritional status, adolescents with negative body image were more likely to be found to have abnormal nutritional status, which can be indicated by the negative correlation value.

Table 5. Spearman test results

	<i>p-Value</i>	Correlation coefficients (r)
Body Image	<0.001	-0,277

Source: Primary data processed by the researcher (2025)

The Relationship of Mindful Eating with Nutritional Status in Adolescents

Based on the spearman test, it was shown that there was no relationship between mindful eating and nutritional status in adolescents at SMAN 8 Cirebon City. The results of the spearman test showed that a significant p-Value of 0.458 which means a p-Value value of >0.05, then Ha was rejected. The value of the correlation coefficient (r) was obtained as 0.053 which showed that the strength of the relationship was very weak and tended to be meaningless. From the results of this analysis, it can be interpreted that mindful eating is not a dominant factor or strongly correlated with the nutritional status of the respondents. It can be concluded that there is no significant relationship between mindful eating and nutritional status in adolescents at SMAN 8 Cirebon City.

Table 6. Spearman test result

	<i>p-Value</i>	Correlation coefficients (r)
<i>Mindful eating</i> Nutritional Status	0,458	0,053

Source: Primary data processed by the researcher (2025)

Multivariate Analysis

Logistic regression analysis shows that the body image variable is the most influential factor on the nutritional status of adolescents. Respondents with a negative body image had a 4.64 times greater chance of experiencing abnormal nutritional status than those with a positive body image (OR = 4.64).

Table 7. Results of multivariate analysis of logistic regression

Variable	Coefficient (B)	Std. Error	Wald	df	Value p	OR	I 95%	
							Min	Max
Body Image	1,534	0,426	12,968	1	<0.001	4,64	0,699	2,369
<i>Mindful eating</i>	-0,122	0,289	0,180	1	0,671	0,89	-0,688	0,443

Source: Primary data processed by the researcher (2025)

Overview of Nutritional Status

The results of this study show that although most adolescents are in the healthy nutritional range, attention to the undernourished group is still needed. Fulfilling nutritional needs is very necessary in adolescence, because during this period there is an increase in nutritional needs to support physical and psychological growth and development (Hardiansyah & Supriasa, 2021).

The results of this study are in line with research conducted by Desfita et al. (2021) in Pekanbaru showing that 40% of respondents have good nutritional status and are still found to be undernourished 23%, malnutrition 16%, overnutrition 12%, and obesity 9%. The results of this study are also in line with the research of Purba et al. (2024), the results are that there are 58% who experience good nutrition, 24.6% are undernourished, 11.1% are overnourished, and 6.1% are obese.

Body Image Overview

Analysis of body image showed that most respondents (83.3%) had a positive perception of their body shape based on the results of the Body Shape Questionnaire. Meanwhile, there are 16.7% of respondents who have a negative body image.

The results of this study are in line with the research conducted by Gimón et al. (2020) which showed that 66.7% of respondents had a positive body image, while 33.3% had a negative body image. The results of this study are also in line with the research of Nurrahim and Pranata (2024), the results were that 68.3% had a positive body image and 31.6% of respondents had a negative body image.

Mindful Eating Overview

More than half of the respondents (55.1%) showed a high level of mindful eating, which reflects awareness in controlling eating behavior. However, the proportion of respondents with low mindful eating is still quite large (44.9%), which indicates the need for educational interventions to form a healthier and more conscious diet.

The results of this study are in line with the research conducted by Wijaya and Adi (2024) showing that 41.6% of respondents have high mindful eating, 10.1% very high, medium to low 34.8%, and 12.4% respectively.

The relationship between body image and nutritional status in adolescents at SMAN 8 Cirebon City

The results of the Spearman correlation test showed a significant negative relationship between Body Shape Questionnaire (BSQ) score and body mass index (BMI) ($r = -0.277$; $p < 0.001$), although the strength of the correlation was relatively weak. This means that the more

negative the adolescent's perception of their body (body image), the more abnormal their nutritional status will be, both in the form of deficiency and overnutrition. These findings support the concept that dissatisfaction with the body contributes to dietary imbalances.

Based on the Dual-Pathway Model, body dissatisfaction can trigger eating restriction pathways and emotional eating, both of which have an impact on nutritional status. Adolescents with negative body image tend to experience psychological distress that affects eating behavior, both in the form of extreme eating restrictions and excessive consumption due to stress. These results are in line with the research of Zahrah & Muniroh (2020) which found that adolescents with over-nutritional status generally have negative body perceptions. Therefore, nutritional interventions in adolescents need to consider psychosocial aspects, including body perception and social pressures on body shape.

The relationship between mindful eating and nutritional status in adolescents

The results of the correlation test showed that there was no significant relationship between mindful eating and nutritional status in adolescents ($r = 0.053$; $p = 0.458$). These findings indicate that the level of awareness at meals does not directly reflect the nutritional status of the respondents. Although most adolescents have a high level of mindful eating, this is not necessarily accompanied by a healthy diet or adequate nutritional intake.

This discrepancy between theory and results can be explained by the presence of intermediate factors, such as the type of food consumed, physical activity, and social and economic factors. Adolescence is a developmental phase that is vulnerable to environmental influences, including social pressures and unstable self-regulation. In addition, education and parental income also influence food choices at home. Thus, high mindful eating is not always followed by good nutritional status. These findings are consistent with previous research by Wijaya & Adi (2024) and Maharani & Khomsan (2024) which also reported no association between mindful eating and nutritional status.

The relationship between body image and mindful eating and nutritional status in adolescents

The results of ordinal logistic regression analysis showed that the regression model was statistically significant (Chi-Square = 14.813; $p < 0.001$) with a Nagelkerke R^2 value of 0.085. This means that the model is only able to explain 8.5% variation in adolescent nutritional status. Of the two independent variables analyzed, only body image had a significant effect on nutritional status ($p < 0.001$; $\beta = 1.534$; 95% CI: 0.699–2.369), while mindful eating showed no significant effect ($p = 0.671$; $\beta = -0.122$).

These findings suggest that adolescents with negative body perceptions are more likely to experience overnutrition or obesity. This is in accordance with the Dual-Pathway Model, which explains that dissatisfaction with body shape can trigger unhealthy eating behaviors, both emotionally and restrictively, thus having an impact on imbalances in nutritional status. Meanwhile, the insignificance of mindful eating may be due to the low consistency of its application in daily life, as well as the strong influence of external factors such as the social environment, family economy, and food availability.

These results are in line with the research of Ruslie & Darmadi which found that body image is the most influential factor in the incidence of obesity in adolescents ($p = 0.015$). Kurniasih et al.'s research also supports these findings by showing a significant influence of body image on adolescent nutritional status ($p < 0.001$). Therefore, nutritional interventions in

adolescents need to pay attention to aspects of body perception and integrate a multidimensional approach that includes nutrition education, physical activity promotion, and strengthening social support.

CONCLUSION

This study found that most adolescents at SMAN 8 Cirebon City had a positive body image (83.3%) and a high level of mindful eating (55.1%), with the majority exhibiting normal nutritional status (52%), although undernutrition (41.4%), overnutrition (3%), and obesity (3.5%) were still observed. Statistical analysis indicated a significant relationship between body image and nutritional status, while mindful eating was not significantly associated; moreover, ordinal logistic regression showed that body image was the most influential factor (OR = 4.64), although both variables explained only 8.5% of the variation, suggesting the involvement of other factors.

These findings highlight the importance of strengthening school- and health-based educational interventions that promote positive body image, healthy eating behaviors, and balanced nutrition, while also involving parents and the school environment to support healthier adolescent lifestyles. Future research is recommended to explore additional determinants—such as physical activity, socioeconomic status, psychological factors, and dietary patterns—using longitudinal designs to better understand causal relationships and improve intervention strategies.

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