

Original Article

Early Detection of Growth Impairment among Children and Adolescents with Eating Disorders: A Cross-Sectional Correlational Study



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ABSTRACT

Background: The growth and development of children and adolescents are influenced by multiple factors, including nutrition, physical health, and psychosocial balance. Eating disorders (EDs) are among the conditions that can significantly disrupt this process, both physiologically and psychologically. Global and local data indicate a rising prevalence of eating disorders among adolescents, which negatively impacts nutritional status and physical growth. This study aims to identify and analyze the relationship between the risk of eating disorders and growth disturbances in children and adolescents based on anthropometric indicators.

Methods: This study employed a quantitative, cross-sectional correlational design and was reported by the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines. A total of 120 participants aged 10–18 years from three schools in Kendari City were included. The risk of eating disorders was measured using the Eating Attitudes Test (EAT-26), while growth status was assessed through measurements of body weight, height, and body mass index (BMI), based on WHO standards. Data were analyzed using Spearman's correlation test and multiple linear regression to evaluate the association and predictive effect of EAT-26 scores on growth indicators, controlling for age and gender.

Results: A total of 39.2% of respondents had EAT-26 scores ≥ 20 , indicating a risk of eating disorders. There was a significant negative correlation between EAT-26 scores and BMI ($r = -0.421$; $p < 0.01$), height ($r = -0.315$; $p < 0.01$), and weight ($r = -0.386$; $p < 0.01$). Multiple linear regression analysis revealed that EAT-26 scores significantly predicted BMI ($\beta = -0.373$; $t = -4.698$; $p < 0.001$), after controlling for age and gender, with an R^2 of 0.198. In contrast, age ($p = 0.125$) and gender ($p = 0.262$) did not show significant effects. These findings indicate that the risk of eating disorders significantly contributes to decreased nutritional status, regardless of age and gender.

Conclusion: Eating disorders significantly contribute to impaired nutritional status and growth in children and adolescents. EAT-26 scores were negatively correlated with BMI, body weight, and height, and served as a significant predictor of BMI, while age and gender showed no significant effects. Early detection of eating disorder risk within school settings is crucial to prevent long-term impacts on adolescents' physical growth and health. Screening tools such as the EAT-26 can serve as effective initial instruments in promotive and preventive health programs.

Keywords: Adolescent Growth; Body Mass Index (BMI); Eating Disorders; EAT-26.

Implications for Practice:

- Routine screening for eating disorders using tools such as the EAT-26 should be implemented in school health programs to enable early detection of growth-related risks.
- A multidisciplinary approach involving physicians, nurses, dietitians, and psychologists is essential for the comprehensive management of adolescents at risk.
- Training for school staff and health workers is recommended to improve early recognition, education, and referral of students showing signs of disordered eating.

Introduction

Optimal growth in children and adolescents is the result of a complex process influenced by multiple factors, including adequate nutritional intake, physical health, and psychosocial balance ([Rosello et al., 2021](#)). One condition with a high potential to disrupt this growth process is eating disorders (ED). Eating disorders affect not only food intake but also significantly interfere with metabolic and hormonal processes essential for linear growth and weight gain. Moreover, EDs may impair physiological, psychological, and social functioning during the critical developmental stages of childhood and adolescence. In this context, eating disorders are considered an independent variable with the potential to cause growth disturbances, which in this study are assessed using anthropometric indicators such as weight, height, and body mass index (BMI) ([Purnamasari et al., 2024](#)).

Globally, the prevalence of eating disorders among children and adolescents has shown a concerning upward trend. Data from the World Health Organization reports an increase in ED cases among individuals aged 10–19 years, with long-term consequences including growth faltering, hormonal disturbances, and cardiovascular complications ([World Health Organization, 2021](#)). According to the National Eating Disorders Association ([D'Adamo et al., 2023](#)), disorders such as anorexia nervosa, bulimia nervosa, and binge eating disorder are leading causes of morbidity and mortality among adolescent girls aged 15–

19 years in several developed countries. These conditions are also increasingly observed in developing nations, in parallel with rising exposure to social media, the idealization of thin body types, and other social pressures that affect body image and eating behavior in adolescents. In Indonesia, although national data are still limited, a local study by ([Sulistyan et al., 2016](#)) in Yogyakarta found that 21.4% of adolescent girls exhibited symptoms of eating disorders, with most of them having below-normal BMI levels.

Eating disorders in children and adolescents can have long-term effects on physical growth. Anorexia nervosa, for example, results in a severe reduction in caloric intake, depletion of energy stores, disruption of bone metabolism, and endocrine dysfunction, including reduced levels of growth hormone and estrogen, ultimately affecting height and bone mass ([Morris et al., 2022](#)). Other studies have shown that adolescent girls with anorexia may experience delayed linear growth and height deficits persisting into adulthood if not treated early. Meanwhile, bulimia nervosa and binge eating disorder often result in extreme fluctuations in body weight, contributing to growth and metabolic development issues ([Modan-Moses et al., 2021](#)).

Anthropometric indicators such as body weight, height, and BMI are key tools for assessing growth status and detecting early deviations from normal growth patterns ([De Arriba Muñoz et al., 2022](#)). Additional research has identified a

significant association between eating disorders and clinically important reductions in BMI among adolescents, as well as stagnation in height growth ([Purnamasari, Nazaruddin, et al., 2023](#)). A study by ([Propper-Lewinsohn et al., 2023](#)) also highlights that delayed diagnosis of eating disorders frequently results in growth delays, particularly among prepubescent children who are still in a rapid growth phase.

Although numerous studies have established a link between eating disorders and growth disturbances, findings vary depending on the type of disorder, duration, and age of onset. Some studies indicate that in cases of mild eating disorders with short duration, growth disturbances may not be immediately apparent due to compensatory body mechanisms ([Lim et al., 2024](#)). However, in chronic or early-onset cases, the impact tends to be more severe and persistent. These research gaps underscore the need for further exploration of how eating disorders affect growth, particularly through anthropometric indicators, in the Indonesian population, which exhibits cultural, dietary, and healthcare access diversity ([Purnamasari, Zoahira, et al., 2023](#)).

Theoretically, the EAT-26 score, which serves as a screening tool for disordered eating attitudes, reflects the severity of maladaptive eating behaviors and cognitive attitudes toward food, body weight, and body image. A high EAT-26 score strongly indicates the likelihood of clinical or subclinical eating disorders that may chronically impair nutritional intake and, consequently, affect the physical growth of children and adolescents. The conceptual model linking eating disorders with growth status identifies maladaptive eating behaviors (e.g., food restriction, self-induced vomiting, laxative use, or extreme fasting) as disruptive factors to the body's energy balance and metabolic status, both of which are essential prerequisites for

optimal growth. Therefore, a high EAT-26 score is theoretically predicted to correlate negatively with body weight, height, and body mass index (BMI). Several studies have further demonstrated that the EAT-26 score can statistically predict the risk of growth failure, particularly among adolescent girls, who are more vulnerable to social pressures related to body shape and the idealization of thinness ([Malla et al., 2021](#)). Accordingly, in this study, the EAT-26 score is used as a key indicator to screen for potential eating disorders and to directly evaluate its relationship with anthropometric outcomes as markers of physical growth.

This study is crucial, given the high number of undiagnosed eating disorder cases among children and adolescents, which often escape timely intervention. Early detection of growth disturbances may serve as an initial indicator of underlying eating disorders. The objective of this study is to identify and analyze the relationship between eating disorders and growth disturbances in children and adolescents, with implications for healthcare professionals, particularly within primary care and school-based health services.

Methods

Study Design

This study employed a quantitative design with a cross-sectional correlational approach, aimed at examining the relationship between eating disorders (independent variable) and growth disturbances (dependent variable) among children and adolescents. Measurements were conducted at a single point in time, without any intervention or repeated observations. Growth indicators included weight, height, and body mass index (BMI), which were analyzed using WHO z-score standards ([Tekola et al., 2024](#)).

Participants

The population of this study comprised school-aged children and adolescents between 10 and 18 years old enrolled in various junior and senior high schools in Kendari City, Southeast Sulawesi. Inclusion criteria were: (1) students aged 10–18 years; (2) willingness to participate with informed consent, additionally requiring parental or guardian consent for those under 18; and (3) a generally healthy condition without chronic illness or medically diagnosed growth or developmental disorders. Exclusion criteria included: (1) students with communication or cognitive impairments that hindered questionnaire completion, and (2) incomplete responses across the questionnaire sections. Participants were selected using a stratified random sampling technique based on educational level and gender, resulting in a final sample of 120 respondents for analysis.

Instruments

Eating Attitudes Test (EAT-26)

The EAT-26 is a widely used screening tool for identifying individuals at risk of eating disorders. It consists of 26 items rated on a 6-point Likert scale (Always = 3, Often = 2, Sometimes = 1, Rarely = 0, Very Rarely = 0, Never = 0). A total score of ≥ 20 indicates a high risk of eating disorders

(Papini et al., 2022).

The instrument was adapted into Indonesian using forward and backward translation procedures by two linguistic experts, and a clinical child psychologist confirmed its content validity to ensure cultural and contextual equivalence. A pilot test was conducted, demonstrating good reliability (Cronbach's $\alpha = 0.8661$). The total score is obtained by summing the individual item scores, resulting in a possible range from 0 to 78. A total score of 20 or above indicates a high risk of an eating disorder and suggests that the respondent should be referred for further professional evaluation (Table 1).

Anthropometric Measurement Sheet

This included weight (in kilograms) measured using a digital scale, height (in centimeters) measured with a stadiometer, and BMI calculated as weight (kg) divided by height squared (m^2). The results were converted into z-scores based on WHO standards to assess growth status (e.g., normal, stunting, overweight).

Demographic Questionnaire

This form collected participants' basic information, including age, gender, and educational level.

Table 1. Eating Attitudes Test (EAT-26) – Versi Bilingual (Indonesia & English Version)

No.	Pernyataan (Bahasa Indonesia)	Statement (English Version)
1	<i>Saya sangat takut menjadi gemuk.</i>	I am very afraid of gaining weight.
2	<i>Saya menghindari makanan berkalori tinggi, meskipun saya sedang lapar.</i>	I avoid high-calorie foods even when I am hungry.
3	<i>Saya sering merasa bersalah setelah makan.</i>	I often feel guilty after eating.
4	<i>Saya lebih memilih makan sendirian daripada bersama orang lain.</i>	I prefer to eat alone rather than with others.
5	<i>Saya sangat peduli dengan bentuk tubuh saya.</i>	I am very concerned about my body shape.
6	<i>Saya memotong makanan menjadi potongan kecil sebelum makan.</i>	I cut my food into small pieces before eating.
7	<i>Saya merasa orang lain akan lebih menyukai saya jika saya lebih kurus.</i>	I feel that others would like me more if I were thinner.
8	<i>Saya menggunakan olahraga secara berlebihan untuk menurunkan berat badan.</i>	I exercise excessively to lose weight.
9	<i>Saya menghindari makanan yang mengandung karbohidrat.</i>	I avoid foods that contain carbohydrates.

No.	Pernyataan (Bahasa Indonesia)	Statement (English Version)
10	<i>Saya merasa bersalah jika tidak berolahraga setelah makan.</i>	I feel guilty if I do not exercise after eating.
11	<i>Saya sering merasa tidak nyaman dengan ukuran tubuh saya.</i>	I often feel uncomfortable with my body size.
12	<i>Saya lebih memilih makanan rendah lemak.</i>	I prefer low-fat foods.
13	<i>Saya suka membandingkan bentuk tubuh saya dengan orang lain.</i>	I like to compare my body shape with others.
14	<i>Saya lebih memikirkan berat badan daripada kesehatan.</i>	I think more about my weight than my health.
15	<i>Saya pernah menggunakan pil pelangsing untuk menurunkan berat badan.</i>	I have used diet pills to lose weight.
16	<i>Saya sering menimbang berat badan saya.</i>	I frequently weigh myself.
17	<i>Saya merasa senang jika bisa menahan lapar dalam waktu lama.</i>	I feel happy when I can endure hunger for a long time.
18	<i>Saya merasa kehilangan kontrol saat makan.</i>	I feel out of control when I eat.
19	<i>Saya pernah memuntahkan makanan yang sudah saya makan.</i>	I have vomited up the food I have eaten.
20	<i>Saya merasa cemas jika makan bersama orang lain.</i>	I feel anxious when eating with others.
21	<i>Saya merasa saya harus sangat kurus agar merasa berharga.</i>	I feel I must be very thin to feel worthy.
22	<i>Saya pernah melewatkan waktu makan dengan sengaja untuk menurunkan berat.</i>	I have deliberately skipped meals to lose weight.
23	<i>Saya merasa tidak nyaman saat melihat tubuh saya di cermin.</i>	I feel uncomfortable seeing my body in the mirror.
24	<i>Saya berpikir tentang makanan hampir sepanjang waktu.</i>	I think about food almost all the time.
25	<i>Saya sering merasa kenyang bahkan sebelum makan banyak.</i>	I often feel full even before eating much.
26	<i>Saya merasa bersalah jika makan makanan yang saya sukai.</i>	I feel guilty when I eat foods I enjoy.

Data Collection

Data collection commenced following official approval from the local Department of Education and the participating schools. The process was conducted by the principal investigator alongside five trained enumerators, all of whom were nursing students in their professional internship phase. Before data collection, a two-day intensive training session was held for the enumerators, covering: (1) familiarisation with and administration of the research instruments; (2) standardised techniques for anthropometric measurements; and (3) ethical considerations and appropriate methods for engaging with children and adolescents. Data collection took place in

designated rooms, such as school auditoriums, to ensure participant comfort and privacy. Questionnaires were completed independently by the participants, with enumerators available to assist when needed.

Data Analysis

Data were analyzed using SPSS version 26. Descriptive statistics were used to describe participant characteristics, EAT-26 scores, and anthropometric data. Normality of data distribution was tested using the Shapiro-Wilk test to determine the appropriate correlation test. If the data were normally distributed, Pearson correlation was used; otherwise, Spearman

correlation was applied. Multiple linear regression analysis was conducted to assess the predictive effect of eating disorder risk on growth status.

Ethical Considerations

The study was approved by the Ethics Committee of Bani Saleh University (reference number: EC.0192/KEPK/STKBS/VII/2024). Consent was obtained from all respondents before they participated in the study. Before data collection, written and verbal explanations were provided to

participants. Written informed consent was obtained from parents/guardians for underage participants, and assent was obtained from the children/adolescents themselves. Participants' identities were kept confidential, and all data were used solely for academic purposes. No invasive procedures were involved in this study, and all processes were conducted by ethical principles concerning research involving children and adolescents.

Results

This study involved 120 respondents, comprising children and adolescents aged 10 to 18 years. All participants were recruited from three schools that had granted permission for participation in the study (**Table 2**).

Table 2. Demographic Characteristics of Respondents

Characteristic	Category	n	%
Sex	Male	51	42.5
	Female	69	57.5
Age	10–12 years	30	25.0
	13–15 years	48	40.0
	16–18 years	42	35.0
BMI (WHO categories)	<-2 SD (underweight)	34	28.3
	-2 to +1 SD (normal)	71	59.2
	> +1 SD (overweight)	15	12.5
EAT-26 Score	≥ 20 (at risk for ED)	47	39.2
	< 20 (not at risk)	73	60.8

The study involved a total of 120 respondents with diverse demographic characteristics. In terms of sex, the majority were female ($n = 69$; 57.5%), while 51 respondents (42.5%) were male. This proportion reflects the dominance of female participation in the study, which is relevant given the higher prevalence of eating disorders typically observed in this group.

With respect to age, respondents were distributed across three age groups. The largest group was aged 13–15 years ($n = 48$; 40.0%), followed by those aged 16–18 years ($n = 42$; 35.0%), and 10–12 years ($n = 30$; 25.0%). These data indicate that most respondents were in middle to late

adolescence, a critical period for identity formation and body image development.

In terms of nutritional status, based on Body Mass Index (BMI) using WHO standards, most respondents had a normal BMI ($n = 71$; 59.2%). Meanwhile, 34 respondents (28.3%) were underweight (< -2 SD), and 15 respondents (12.5%) were categorized as overweight ($> +1$ SD). This variation in nutritional status is important in examining its association with body image and the risk of eating disorders. Using the EAT-26 instrument, results showed that 47 respondents (39.2%) had scores ≥ 20 , indicating a risk of developing an eating disorder. The remaining 73

respondents (60.8%) had scores below 20, suggesting they were not at risk. These findings indicate that nearly 4 out of 10 adolescents in this study are potentially at risk for disordered eating behaviors. These findings support the initial assumption that eating disorders are a significant issue among adolescents and warrant further exploration of physical growth.

Relationship Between Eating Disorder Score (EAT-26) and Growth Indicators

Spearman correlation analysis was used to examine the relationship between EAT-26 scores and growth indicators (BMI, height, and weight).

Table 3. Correlation Between Eating Disorder Score (EAT-26) and Growth Indicators

Variables	Correlation Coefficient (r)	p-value	Interpretation
EAT-26 Score vs BMI	-0.421	<0.001**	Moderate negative correlation
EAT-26 Score vs Height	-0.315	0.001**	Weak negative correlation
EAT-26 Score vs Weight	-0.386	<0.001**	Moderate negative correlation

Note: $p < 0.01$ indicates statistical significance. These results demonstrate that higher eating disorder risk is associated with lower BMI, height, and weight among respondents.

The Pearson correlation analysis confirmed a significant association between eating disorder scores (EAT-26) and growth indicators, including BMI, height, and weight (**Table 3**).

First, a moderate negative correlation was observed between EAT-26 scores and BMI ($r = -0.421$; $p < 0.001$), indicating that higher EAT-26 scores, which reflect a greater risk of eating disorders, were associated with lower BMI values. In other words, adolescents with disordered eating tendencies tend to have lower nutritional status.

Second, a weak negative correlation was found between EAT-26 scores and height ($r = -0.315$; $p = 0.001$), suggesting that increased risk of eating disorders is associated with reduced height, although this relationship is less pronounced than that with BMI.

Third, there was a moderate negative correlation between EAT-26 scores and weight ($r = -0.386$; $p < 0.001$), reinforcing the pattern that individuals with higher eating disorder risk scores tend to have lower body weight.

Overall, these findings indicate that disordered eating behaviors, as reflected by high EAT-26 scores, are significantly associated with reduced physical growth indicators, particularly BMI and weight. These findings consistently support the initial hypothesis that disordered eating behavior has a negative impact on the physical growth status of adolescents.

Multiple Linear Regression Analysis Between EAT-26 Score and BMI, Controlling for Age and Sex

To strengthen the hypothesis testing, a multiple linear regression analysis was conducted with BMI as the dependent variable and EAT-26 score as the main predictor. At the same time, age and gender were included as control variables.

Table 4. Regression Results: EAT-26 Score Predicting BMI (Controlling for Age and Sex)

Predictor Variables	β (Beta)	t	p-value
EAT-26 Score	-0.373	-4.698	< 0.001**
Age	-0.126	-1.547	0.125
Sex	0.092	1.127	0.262
$R^2 = 0.198$			

Notes: The regression model shows that EAT-26 scores significantly predict BMI among children and adolescents ($p < 0.01$), contributing to 19.8% of the variance in BMI. Age and sex were not significant predictors in this model.

This multiple regression analysis was conducted to determine the effect of eating disorder risk (EAT-26 score) on BMI after controlling for age and sex. The regression model yielded an R^2 of 0.198, indicating that approximately 19.8% of the variance in BMI is explained by the combination of EAT-26 scores, age, and sex.

Results revealed that the EAT-26 score was a significant predictor of BMI ($\beta = -0.373$; $t = -4.698$; $p < 0.001$), where the negative beta coefficient indicates that higher eating disorder scores are significantly associated with lower BMI. This finding supports the view that greater disordered eating behavior contributes to poorer nutritional status (**Table 4**).

Conversely, age and sex did not have a significant impact on BMI. Age had $\beta = -0.126$ ($t = -1.547$; $p = 0.125$) and sex had $\beta = 0.092$ ($t = 1.127$; $p = 0.262$), with both p-values exceeding 0.05. Therefore, these variables were not statistically significant predictors in this model. This highlights that eating disorder risk is a more critical determinant of BMI than demographic factors such as age and sex.

These results reinforce the hypothesis that the risk of eating disorders plays a crucial role in influencing adolescent nutritional status, even after controlling for demographic factors.



Figure 1. The scatter plot illustrates a downward trend in BMI as EAT-26 scores increase, indicating a negative association between the risk of eating disorders and nutritional status.

Figure 1 presents a scatter plot that visualizes the relationship between EAT-26 scores, representing the level of eating disorder risk, and Body Mass Index (BMI), which serves as one of the key indicators of growth status in children and adolescents. Each dot represents an individual respondent's data point, while the red line

denotes the linear regression trendline. The plot also includes 95% confidence bands (shaded area), which provide a visual estimation of the precision around the fitted line.

Visually, the graph exhibits a clear negative linear association between EAT-26 scores and BMI. This is evidenced by the

downward slope of the regression line, indicating that higher EAT-26 scores (suggestive of a greater risk of disordered eating) are associated with lower BMI values. The narrowing or widening of the confidence bands across the plot reflects the variability and reliability of the regression estimate at different levels of EAT-26 scores.

These findings reinforce the hypothesis that disordered eating behaviors, such as restrictive intake or unhealthy eating patterns, can have a direct impact on the nutritional and physical growth status of adolescents. The inclusion of a visual element enhances the interpretability of the statistical results and underscores the practical implications.

From a clinical and public health perspective, a high EAT-26 score can serve as an early warning sign for potential nutritional deficits. Early identification through such screening tools may support targeted preventive and promotive interventions aimed at minimizing long-term consequences for child and adolescent development.

Discussion

This study aimed to examine the association between the risk of eating disorders (ED) and the growth status of children and adolescents, while accounting for age and sex as covariates. A total of 120 participants aged 10 to 18 years from three schools, all of whom provided written informed consent, were included in the study. No participants were excluded after the selection process. Furthermore, there were no missing data for key variables (EAT-26 scores, BMI, age, sex, height, and weight), allowing for a complete-case analysis.

The prevalence of eating disorder risk, defined as an EAT-26 score ≥ 20 , was identified in 39.2% of participants. This

figure is considered high, surpassing the global clinical prevalence of eating disorders, which ranges between 1% and 4%. Even when compared to reports indicating up to 30% of adolescents engaging in disordered eating behaviors, the proportion found in this study remains significant ([Stordeur et al., 2024](#)).

This elevated prevalence suggests that the risk of eating disorders constitutes a hidden yet serious concern, particularly within school settings. Adolescence is a critical period for the development of body image and eating habits, which are often shaped by sociocultural pressures. ([Roy-Lavallee et al., 2020](#)) highlight that societal expectations surrounding the ideal body can contribute to dysfunctional eating behaviors even before clinical symptoms emerge. Early detection within adolescent communities is therefore crucial.

Spearman correlation analyses revealed significant negative associations between EAT-26 scores and key growth indicators: body mass index (BMI) ($r = -0.421, p < 0.01$), height ($r = -0.315, p < 0.01$), and weight ($r = -0.386, p < 0.01$). These findings align with previous research by ([Thompson & Ordaz, 2016](#)), which indicated that dysfunctional eating behaviors are linked to growth impairments and chronic malnutrition, including delays in biological development ([López-Cepero et al., 2021](#)).

A multiple linear regression analysis was conducted to assess whether EAT-26 scores predicted BMI, controlling for age and sex. The results demonstrated that EAT-26 scores were a significant negative predictor of BMI ($\beta = -0.373, p < 0.01$), whereas age ($p = 0.125$) and sex ($p = 0.262$) were not statistically significant. The coefficient of determination ($R^2 = 0.198$) suggests that approximately 19.8% of the variance in BMI is explained by the model. This finding indicates that the risk of eating disorders contributes independently to

nutritional status decline, beyond demographic factors.

Substantively, these results support the notion that eating disorders are not confined to specific age or sex groups. While the manifestations may vary between males and females ([Stice & Shaw, 2020](#)), the physiological consequences of dysfunctional eating behaviors remain largely similar, such as unhealthy weight loss and metabolic disturbances. Therefore, risk-based behavioral profiling may serve as a more effective basis for intervention than demographic-based approaches.

Moreover, the impact of eating disorders extends beyond current nutritional status. ([Haines, 2023](#)) notes that eating disorders can disrupt hormonal balance, delay puberty, and reduce bone mass and height due to chronic nutrient deficiencies, thereby affecting long-term health and quality of life.

Using the EAT-26 as a screening instrument, this study underscores that eating disorder risk—even in the absence of a clinical diagnosis—has meaningful implications for growth status. This reinforces the urgency of integrating routine screening into school health programs. In the Indonesian context, the findings are particularly relevant, as they reveal that eating disorder risk constitutes a public health concern in developing countries. To date, few local studies have addressed this issue systematically, highlighting the need for strengthened policy interventions at the primary healthcare and school levels ([Steegers et al., 2021](#)).

Nevertheless, several limitations must be acknowledged. First, the sample was limited to three schools within a geographically homogeneous area, thereby restricting the generalizability of the findings. Second, the cross-sectional design limits causal inference. Third, while the EAT-26 is a valid screening tool, it does not provide definitive diagnoses. Although the

researchers directly collected anthropometric measurements to enhance validity, no biochemical assessments, such as hormone levels or biomarkers, were conducted.

The practical implications of these findings include the necessity of integrating eating disorder risk screening into school health units and primary healthcare services. School health personnel and guidance counselors should receive training to identify and respond to early signs of disordered eating. In terms of curriculum development, educational content promoting positive body image, healthy eating habits, and coping strategies against social pressures should be incorporated. From a managerial perspective, cross-sector collaboration is essential to establish anti-body shaming campaigns, peer support groups, and active involvement of parents and educators.

In conclusion, this study highlights that eating disorder risk is a complex public health issue with potential long-term consequences. Therefore, a comprehensive, multi-level approach encompassing promotive, preventive, and curative strategies is essential to safeguard the optimal growth and well-being of adolescents.

Relevance to Clinical Practice

This study highlights the importance of early detection of eating disorders among children and adolescents, with a particular focus on the use of the EAT-26 instrument as a screening tool. Findings indicate that EAT-26 scores ≥ 20 often reflect a risk of eating disorders that can negatively affect growth, such as linear growth retardation, weight loss, hormonal disruptions, and delayed puberty. Early identification allows for timely intervention, thus preventing long-term consequences that may impair adolescent quality of life.

Moreover, the findings offer practical guidance for healthcare professionals in

clinical decision-making. The EAT-26 score was shown to be a significant predictor of BMI regardless of age or gender, making it a more relevant tool for identifying dysfunctional eating risks than demographic-based approaches. This enables healthcare providers to design more personalized and targeted assessment and intervention plans across various settings, including community health centers, hospitals, and school health services.

These findings also encourage the enhancement of clinical protocols by integrating the EAT-26 into standard health assessments for children and adolescents, particularly in school health units and adolescent health services. Interprofessional collaboration among physicians, nurses, dietitians, and psychologists is crucial in designing holistic interventions. Furthermore, this study demonstrates that the use of simple and standardized instruments can improve screening and care efficiency, reduce the risk of delayed diagnosis, and prevent serious complications resulting from untreated eating disorders.

Conclusion

This study demonstrates a significant negative association between the risk of eating disorders and growth status among children and adolescents, as reflected by lower body mass index (BMI), height, and weight. The risk of eating disorders, measured using the EAT-26 instrument, was identified as an independent predictor of lower BMI, unaffected by age and gender. This finding underscores that eating disorder risk is a cross-demographic public health concern that warrants serious attention.

The results highlight the urgency of early detection and intervention for dysfunctional eating behaviors as part of broader efforts to improve adolescent

physical and mental health. It is therefore recommended that the EAT-26 be incorporated into routine screening within School Health Programs and primary healthcare services to facilitate early identification of eating disorder risk among adolescents. Furthermore, capacity building for healthcare professionals and educators through targeted training is essential to ensure accurate and sensitive identification and management of this issue.

As part of ensuring methodological transparency and reporting quality, this study was conducted according to the *Strengthening the Reporting of Observational Studies in Epidemiology* (STROBE) guidelines. Adherence to these standards is expected to enhance the validity and openness of the research methodology employed. Future research using longitudinal and qualitative approaches is needed to explore the long-term dynamics and contextual factors influencing eating disorder risk among Indonesian adolescents. Such approaches may provide deeper insights to inform the development of evidence-based and sustainable intervention policies.

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CrediT Authorship Contributions Statement

Anisa Purnamasari: Conceptualization, Methodology, Supervision, Writing - Original Draft

Wa Ode Aisa Zoahira: Investigation, Resources, Data Curation, Project Administration

I Wayan Romantika: Software, Validation, Formal Analysis, Writing - Review & Editing
Apriyanti Apriyanti: Resources, Editing, Visualization, Project Administration

Conflicts Of Interest

There is no conflict of interest.

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