



# Association of mindful eating, nutrition label literacy, and sugar-sweetened beverage consumption with nutritional status among adolescents in Tangerang, Indonesia

*Hubungan mindful eating, literasi label gizi, dan konsumsi minuman manis terhadap status gizi remaja di Kota Tangerang, Indonesia*

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## Abstract

Adolescent nutritional status is a major public health concern because it affects growth and development in this age group. In Indonesia, the prevalence of overweight and obesity among adolescents continues to increase, partly due to the high consumption of sugar-sweetened beverages. Mindful eating and nutrition label literacy may promote healthier consumption behavior. This study examined the associations between mindful eating, nutrition label literacy, and sugar-sweetened beverage consumption with the nutritional status of adolescents. A cross-sectional analytical study was conducted in May 2025 at Public Junior High School 31 in Tangerang City. A total of 160 participants were selected using proportionate stratified random sampling method. Data were collected using the Mindful Eating Questionnaire, Nutrition Label Literacy Questionnaire, Food Frequency Questionnaire, and anthropometric measurements to determine BMI-for-age. Pearson's and Spearman's correlation tests were performed. Mindful eating ( $p < 0.001$ ;  $r = 0.494$ ) and sugar-sweetened beverage consumption ( $p < 0.001$ ;  $r = 0.601$ ) were significantly associated with nutritional status. Nutrition label literacy was also significantly associated with nutritional status, although the correlation was weak ( $p = 0.049$ ;  $r = -0.156$ ). In conclusion, higher mindful eating and lower sugar sweetened beverage consumption were associated with better nutritional status in adolescents.

**Keywords:** *Mindful eating*, nutritional status, reading nutrition labels, sugary drink consumption

## Abstrak

Status gizi remaja merupakan aspek penting dalam kesehatan masyarakat karena berpengaruh pada pertumbuhan dan perkembangan. Di Indonesia, prevalensi kelebihan berat badan dan obesitas pada remaja masih meningkat, salah satunya dipengaruhi oleh tingginya konsumsi minuman manis. Di sisi lain, *mindful eating* dan literasi label gizi diduga berperan dalam membentuk perilaku konsumsi yang lebih sehat. Penelitian bertujuan untuk mengetahui hubungan antara *mindful eating*, membaca label gizi, dan konsumsi minuman manis dengan status gizi remaja. Metode penelitian kuantitatif dengan desain *cross sectional*. Penelitian ini bertujuan untuk mengetahui hubungan antara *mindful eating*, literasi label gizi, dan konsumsi minuman manis dengan status gizi remaja. Penelitian menggunakan desain analitik potong lintang (*cross-sectional*) yang dilaksanakan pada bulan Mei 2025 di SMPN 31 Kota Tangerang. Sebanyak 160 responden dipilih dengan teknik proportionate stratified random sampling. Data dikumpulkan menggunakan *Mindful eating Questionnaire*, *Nutrition Label Literacy*

Questionnaire, dan *Food Frequency Questionnaire* (FFQ), serta pengukuran antropometri untuk memperoleh status gizi berdasarkan IMT/U. Analisis dilakukan menggunakan uji korelasi Pearson dan Spearman. Hasil penelitian menunjukkan terdapat hubungan signifikan antara *mindful eating* ( $p < 0,001$ ;  $r = 0,494$ ) dan konsumsi minuman manis ( $p < 0,001$ ;  $r = 0,601$ ) dengan status gizi remaja. Sementara itu, literasi label gizi juga menunjukkan hubungan signifikan namun dengan kekuatan yang sangat lemah ( $p = 0,049$ ;  $r = -0,156$ ). Kesimpulan, semakin tinggi *mindful eating* dan semakin rendah konsumsi minuman manis maka semakin baik status gizi remaja.

**Kata Kunci:** Literasi label gizi, *mindful eating*, minuman manis, remaja, status gizi

## Introduction

Adolescent nutritional status is an important public health concern because it affects growth, development, academic performance, and the risk of non-communicable diseases in adulthood (Barinda et al., 2024). The 2023 Indonesian Health Survey reported that 16.2% of adolescents were overweight or obese, indicating that the double burden of malnutrition continues to threaten this age group (Kemenkes RI, 2023). This issue is particularly important during adolescence, a period characterized by accelerated physical growth, cognitive development, and psychosocial changes that increase vulnerability to nutritional problems when dietary intake and eating behaviors are not properly managed (Hafiza et al., 2021; Widnatusifah et al., 2020).

Nutritional problems among adolescents are partly attributable to the high consumption of sugar-sweetened beverages (SSBs), which contain substantial amounts of simple sugars. Excessive sugar intake increases the total daily energy intake and promotes body fat accumulation, thereby contributing to the risk of being overweight and obese (Yulianti, 2021). National data also indicate that the prevalence of obesity increased from 21.8% in 2018 to 23.4% in 2023. These findings underscore the importance of investigating sugar-sweetened beverage consumption as a behavioral factor that may exacerbate excess weight gain among adolescents.

The high consumption of sugar-sweetened beverages is a common contributor to obesity. Therefore, controlling consumption and reading nutrition labels are important strategies for preventing obesity, particularly among adolescents with excess weight (Prasetyo et al., 2021).

Mindful eating is a cognitive approach to eating behavior and health that involves attending to hunger and satiety cues and making conscious food-related decisions (Mustakim et al., 2024). Practicing mindful eating may enable individuals to make more critical food choices, including reading nutrition labels before purchasing products, and may consequently reduce the consumption of high-sugar beverages associated with weight gain. Several studies have reported a negative correlation between mindful eating and body mass index (BMI), suggesting that adolescents who eat mindfully are more likely to limit their excessive energy intake.

However, a study of adolescents in Tangerang found no association between mindful eating and BMI (Mustakim et al., 2024). In contrast, another study among senior high school students reported a significant negative association between emotional responses and nutritional status (Maharani & Khomsan, 2024). These inconsistent findings reveal an important research gap regarding the joint association of mindful eating, nutrition label reading behavior, and sugar-sweetened beverage consumption with adolescent nutritional status.

Nutrition label-reading behavior and sugar-sweetened beverage consumption may both influence the nutritional status of adolescents. Peer influence and media exposure also shape adolescents' beverage choices, often contributing to high levels sugar-sweetened beverage consumption (Yulianti, 2021). The effects of such consumption may be particularly relevant among male adolescents and those who pay limited attention to nutrition information (Pratama & Mardiyanti, 2024). Although mindful eating, nutrition label literacy, and sugar-sweetened beverage consumption have been examined separately in various populations, no

study has simultaneously assessed the associations of these three factors with nutritional status among adolescents, particularly in Tangerang City.

A preliminary study at Public Junior High School 31, Tangerang City, found that all students consumed sugar-sweetened beverages; 76.7% preferred sweetened tea, and 23.3% consumed it daily. Although 96.7% of the participants recognized the importance of nutrition labels, only 20% reported always reading them. Furthermore, 73.3% of the participants were unfamiliar with mindful eating. Students also frequently consumed packaged sugar-sweetened beverages that were readily available in school cafeterias and nearby food stalls. These findings indicate limited mindful eating practices and nutrition label use, along with high sugar-sweetened beverage consumption among adolescents. Therefore, this study aimed to analyze the associations between mindful eating practices, nutrition label-reading behavior, and sugar-sweetened beverage consumption and the nutritional status of adolescents at Public Junior High School 31, Tangerang City.

## Methods

This quantitative study employed a cross-sectional design to examine the associations among variables measured at a single point in time. Second, due to its cross-sectional design, causal relationships could not be established. The study was conducted in May 2025 at Public Junior High School 31 in Tangerang City.

The study population comprised 312 eighth-grade students aged 13–15 years. The required sample size was calculated using the formula for testing the difference between two proportions, with the assumptions  $p_1 = 0.50$ ,  $p_2 = 0.30$ ,  $\alpha = 0.05$ , and  $\beta = 0.20$ , resulting in a final sample of 160 students. Participants were selected using proportionate stratified random sampling based on three class strata, with the number selected from each stratum determined proportional to class size. Random selection was performed within each stratum and repeated when a selected student did not meet the eligibility criteria to minimize the selection bias. The inclusion criteria were students aged 13–15 years who were enrolled in the eighth grade and agreed to participate by providing informed consents. The exclusion criteria were as follows:

students who were unwell during data collection, including those with a fever of  $\geq 38^\circ\text{C}$ , severe influenza, or any condition that could affect anthropometric measurements; students following a special diet, such as a medically prescribed or low-calorie diet; and students who withdrew during the study.

The independent variables were mindful eating, nutrition label-reading behavior, and sugar-sweetened beverage consumption, while nutritional status was the dependent variable. The participant characteristics included age, sex, and class of the participants. No personally identifiable information, such as names, was collected to maintain the anonymity of the participants.

Mindful eating was assessed using the *Mindful Eating Questionnaire*. The original instrument comprised 28 items rated on a four-point Likert scale ranging from 1 to 4 (Maharani & Khomsan, 2024). Nutrition label-reading behavior was assessed using a questionnaire that initially comprised 15 items rated on a three-point Likert scale ranging from 1 to 3 (Zantika & Kurnia, 2023). Sugar-sweetened beverage consumption was assessed through interviews using a Food Frequency Questionnaire (FFQ; Sirajuddin et al., 2018).

Body weight was measured using a digital scale with a precision of 0.1 kg, and height was measured using a microtoise with a precision of 0.1 cm. Both instruments were calibrated before data collection. The digital scale was tested using a standard weight and checked to ensure that it returned to zero, whereas the Microtoise was inspected for proper vertical alignment and an accurate zero point.

Body weight and height measurements were used to calculate the body mass index-for-age (BMI-for-age). Nutritional status was classified according to the categories specified in Regulation of the Minister of Health of the Republic of Indonesia No. 2 of 2020 (Permenkes, 2020): thinness ( $z$ -score  $< -2$  SD), normal nutritional status ( $-2$  SD to  $+1$  SD), overweight ( $> +1$  SD to  $+2$  SD), and obesity ( $> +2$  SD).

Mindful eating and nutrition label-reading questionnaires were pilot-tested among 33 respondents. Item validity was established when the calculated correlation coefficient was  $\geq$  the critical  $r$  value of 0.344 at  $\alpha = 0.05$ . Following validity testing, 25 of the original 28 mindful eating items and 14 of the original 15 nutrition-label-reading items were retained. Reliability

testing yielded Cronbach's alpha coefficients of 0.890 for the mindful eating questionnaire and 0.915 for the nutrition label-reading questionnaire, indicating that both instruments had satisfactory reliability.

Data were processed and analyzed using SPSS version 26 (IBM Corp). 2020). Data processing included entry, coding, and cleaning to identify duplicate records and implausible values. The Shapiro–Wilk test was used to assess the normality of the data. Univariate analyses were conducted to describe the distribution of all variables. Bivariate analyses were performed using Pearson's correlation test for normally distributed data, namely mindful eating and nutrition label-reading behavior, and Spearman's rank correlation test for non-normally distributed data, namely sugar-sweetened beverage consumption. Statistical significance was set at  $\alpha = 0.05$ . Correlation strength was interpreted as weak ( $r = 0.00$ – $0.25$ ), moderate ( $r = 0.26$ – $0.50$ ), strong ( $r = 0.51$ – $0.75$ ), or very strong ( $r > 0.75$ ).

Ethical approval was obtained from the Research Ethics Committee of Universitas Esa Unggul (approval no. 0925-05.037/DPKE-KEP/FINAL-EA/UEU/V/2025).

## Result and Discussion

The participants were adolescent students enrolled in the eighth grade at Public Junior High School 31, Tangerang City. They were 13–16 years old and agreed to participate in the study. This study focused on mindful eating, nutrition labelreading behavior, sugar-sweetened beverage consumption, and nutritional status. The participant characteristics are presented in Table 1.

As shown in Table 1, the study included 160 eighth-grade students aged 13–16 years old. Most participants were male ( $n = 85$ ), and the majority were 14 years old ( $n = 114$ , 71.3%). These data provide an overview of the participants included in the assessment of mindful eating, nutrition labelreading behavior, sugar-sweetened beverage consumption, and adolescent nutritional status.

Most participants had a normal nutritional status ( $n = 106$ ; 66.3%). The remaining participants were classified as overweight ( $n = 37$ ; 23.1%), obese ( $n = 12$ ; 7.5%), or thin ( $n = 5$ ; 3.1%). The mean BMI-for-age z-score was 0.390

$\pm 1.340$ , with values ranging from  $-2.80$ – $3.87$ . This distribution indicates that most participants were within the normal category, although the proportions of adolescents who were overweight or obese warrant particular attention.

**Table 1.** Participant characteristics (n = 160)

| Characteristic     | n   | %    |
|--------------------|-----|------|
| Sex                |     |      |
| Male               | 85  | 53.1 |
| Female             | 75  | 46.9 |
| Age                |     |      |
| 13 years           | 31  | 19.4 |
| 14 years           | 114 | 71.3 |
| 15 years           | 14  | 8.8  |
| 16 years           | 1   | 0.6  |
| Nutritional status |     |      |
| Thinness           | 5   | 3.1  |
| Normal             | 106 | 66.3 |
| Overweight         | 37  | 23.1 |
| Obesity            | 12  | 7.5  |

Eighth-grade students are generally in early adolescence, a critical period for the development of habits and behaviors, including food and beverage choices (Andrianto, 2019; Suryana et al., 2022). At this developmental stage, critical thinking skills and health awareness are still developing. Consequently, adolescents may select sugar-sweetened beverages in response to social influences or prevailing trends rather than considering their nutritional values (Masri et al., 2022; Sari et al., 2021).

Male students comprised 53.1% of the participants. Pratama and Mardiyanti (2024) reported that female adolescents tend to demonstrate greater concern for health-related issues than their male counterparts, suggesting that sex differences may influence consumption patterns of energy drinks. Participants were recruited from nine classes, ranging from Class 8A to Class 8I, with a relatively balanced distribution.

Most participants were 13–14 years old, which is an important developmental period for establishing consumption behaviors and lifestyle patterns. Therefore, nutrition education interventions should be systematically implemented during this period, as various studies have demonstrated their effectiveness in improving health-related knowledge and behaviors. Continuous provision of nutritional information may help adolescents make healthier food choices (Siregar et al., 2019).

**Table 2.** Nutritional status, mindful eating, nutrition label-reading behavior, and sugar-sweetened beverage consumption among participants

| Variable                             | n   | Minimum–Maximum | Mean  | Standard Deviation |
|--------------------------------------|-----|-----------------|-------|--------------------|
| Nutritional status                   | 160 | –2.80–3.87      | 0.39  | 1.34               |
| Mindful eating                       | 160 | 34–89           | 60.83 | 11.982             |
| Nutrition label reading              | 160 | 21–38           | 30.48 | 3.767              |
| Sugar-sweetened beverage consumption | 160 | 0.7–24.3        | 11.28 | 6.211              |

As presented in Table 2, four principal variables were examined: nutritional status, mindful eating, nutrition labelreading behavior, and sugar-sweetened beverage consumption. Nutritional status was assessed descriptively using BMI-for-age, with a mean z-score of 0.390  $\pm$  1.340 and values ranging from –2.80 to 3.87.

Nutritional status is an important indicator of whether an individual has received adequate nutrient intake, particularly during adolescence, which is characterized by rapid growth (Hafiza et al., 2021). Adolescents with normal nutritional status generally demonstrate better academic performance and more stable health than those experiencing undernutrition or overnutrition (Barinda et al., 2024). The presence of students with abnormal nutritional statuses indicates emerging health risks among some students, including obesity, anemia, hypertension, and type 2 diabetes (Nurjayanti et al., 2020).

Daily food and beverage consumption patterns are among the principal factors influencing the nutritional status. Various sugar-sweetened beverages, including soft drinks, fruit-flavored beverages, and sweetened tea, were available in the cafeteria of Public Junior High School 31, Tangerang City. These beverages are popular among adolescents because of their appealing taste, with consumption further reinforced by advertising and peer pressure (Artadini et al., 2022). Prasetyo et al. (2021) similarly reported that excessive consumption of sugar-sweetened beverages is closely associated with an increased risk of adolescent obesity.

Excessive consumption of foods or beverages high in sugar may result in excess energy intake and subsequent weight gain (Prasetyo et al., 2021). Limited awareness of healthy eating patterns and infrequent use of nutrition labels may prevent some students from recognizing the number of calories they consume. Although most participants had a normal nutritional status, preventive measures are necessary to reduce the risk of future deterioration.

Mindful eating was assessed using the validated *Mindful Eating Questionnaire (MEQ)*,

and the total score was calculated by summing all item scores. The mean mindful eating score was 60.83 (SD = 11.892), with scores ranging from 34–89. Nutrition label-reading behavior was measured using a standardized and validated questionnaire, yielding a mean score of 30.48 (SD = 3.767), with a range of 21–38. The frequency of sugar-sweetened beverage consumption was assessed through interviews using a Food Frequency Questionnaire (FFQ) designed to identify how frequently participants consumed these beverages in their daily lives. The mean consumption score was 11.28 (SD = 6.211), with values ranging from 0.7–25.3.

**Table 3.** Associations of mindful eating, nutrition label-reading behavior, and sugar-sweetened beverage consumption with adolescent nutritional status

| Variable                             | p-value | r      |
|--------------------------------------|---------|--------|
| Mindful eating                       | <0.001  | 0.494  |
| Nutrition label reading              | 0.049   | –0.156 |
| Sugar-sweetened beverage consumption | <0.001  | 0.601  |

### Association Between Mindful Eating and Adolescent Nutritional Status

Mindful eating is an approach that emphasizes full awareness of the eating process. It involves recognizing hunger and satiety cues, appreciating the taste of food, and understanding the emotional and habitual factors that influence eating behaviors (Guendelman, 2017). This approach is intended not only to promote rapid weight loss but also to foster a healthy and balanced relationship with food.

The questionnaire findings indicated that most participants demonstrated relatively favorable mindful eating practices. Most adolescents reported enjoying their food (66.9%), feeling relaxed while eating (54.4%), and paying attention to the appearance, color, and aroma of their food (50–54%). However, less mindful behaviors were also observed, including frequent distraction while eating (56.3%), eating hurriedly (46.9%), and

overeating behaviors, such as taking additional portions despite feeling full (43.8%) or experiencing difficulty stopping when eating palatable foods (45%). Awareness of external influences was relatively limited, with only 11%–14% of participants recognizing the effects of advertising or eating without hunger. Nevertheless, some adolescents demonstrated dietary self-control, including the ability to stop eating food they liked (33.8%).

These findings are consistent with those of Mustakim et al. (2024), who reported that mindful eating may help improve the nutritional status of individuals with excess weight or undernutrition. Conscious eating encourages individuals to select foods more carefully and regulate the amount consumed, thereby supporting a balance between physiological requirements and nutrient intakes. Hendrickson and Rasmussen (2017) also reported that mindful eating was effective in reducing impulsive eating behaviors that frequently contribute to nutritional imbalances in adolescents.

Pearson's correlation analysis identified a significant association between mindful eating and nutritional status of adolescents at Public Junior High School 31, Tangerang City ( $p = 0.001$ ,  $r = 0.494$ ). The correlation was positive and moderate, indicating that mindful eating practices were associated with better nutritional status. In this study, mindful eating included awareness of hunger and satiety cues, avoidance of distractions while eating, and slow and attentive food consumption.

This finding differs from that of Mustakim et al. (2024), who found no significant association between mindful eating and the BMI. This discrepancy may be attributable to differences in the participant characteristics. Participants in the present study were adolescents who remained particularly susceptible to external influences, including peers, social media, and food advertisements. Therefore, mindful eating may have a more pronounced relationship with eating patterns and nutritional status. In contrast, the participants in Salsabila's study were university students who may have had greater control over their eating behaviors.

These findings emphasize that mindful eating alone may be insufficient without adequate macro- and micronutrient intakes. Barinda et al. (2024) reported that

undernutrition during adolescence may adversely affect cognitive functions and academic performance. Therefore, mindful eating should be accompanied by comprehensive nutrition education and access to nutritious foods to optimize its potential benefits for the nutritional status of adolescents.

Overall, the findings indicate a positive association between mindful eating and nutritional status in adolescents. Awareness of food enjoyment, taste, and the eating process represents encouraging behavioral development. Nevertheless, mindful eating practices remain inconsistent, particularly regarding the control of impulsive eating and maintenance of attention during meals. Thus, although mindful eating represents a promising strategy for supporting nutritional status, more consistent and integrated implementation is required to maximize its benefits in patients with diabetes.

### **Association Between Nutrition Label Reading and Adolescent Nutritional Status**

Pearson's correlation analysis demonstrated a significant association between nutrition label-reading behavior and adolescent nutritional status at Public Junior High School 31, Tangerang City ( $p = 0.049$ ,  $r = -0.156$ ). Although the correlation was weak, the negative direction indicated that more frequent reading of nutrition labels was associated with slightly lower nutritional status scores. This finding does not imply that reading labels directly causes a reduction in the nutritional status. Instead, it suggests that label-reading behavior may not consistently be accompanied by an adequate understanding or effective application of nutritional information in real life.

This finding is consistent with previous research, indicating that nutrition label-reading behavior is related to an individual's knowledge and understanding of nutritional information. Although reading labels is a positive initial step, it does not necessarily lead to healthier consumption decisions without sufficient comprehension and the ability to interpret the information. This may explain why lower nutritional status scores were observed, even though participants had begun to develop label-reading habits.

Questionnaire data further supported this finding. Most participants regularly checked the halal certification logo (80%), expiration date

(70.6%), and product brands (65%). However, only a small proportion paid attention to important components of nutrition labels, such as calorie content (13.1%) and the percentage of the recommended dietary allowance (14.4%). These findings demonstrate that although participants had developed label-reading habits, their attention was directed more toward food safety and personal preferences than nutritional content. Islamiati and Sumarmi (2023) similarly found that even when nutrition label literacy improved, adolescents tended to be more strongly influenced by product images and taste than by nutritional composition.

The proportions of participants who read nutritional information before purchasing a product (35.6%), compared the nutritional content of different products (25.6%), and considered serving size (15%) remained low. These findings support the view that nutritional value is not yet a primary consideration in food selection. Consistent with Badriyah and Syafei (2019), even when label-reading behavior was relatively common, most respondents did not understand the nutritional terms on the labels. Consequently, reading labels had no meaningful influence on their consumption behavior or nutritional status, indicating that the available nutritional information was not used optimally.

Nafisah et al. (2023) also reported at Universitas Muhadi Setiabudi that reading nutrition labels without adequate understanding, motivation, and commitment to applying the information was insufficient to establish healthy eating patterns. Therefore, the observed negative correlation may reflect a gap between passive knowledge, represented by reading labels, and active behavior, represented by modifying consumption patterns.

Other external factors should also be considered, including physical activity, the availability of healthy foods at home and school, and social influence. Anggraini et al. (2018) reported that individuals with adequate nutrition label knowledge may experience overnutrition or undernutrition when their environment is unsupportive or their eating habits are inconsistent. Thus, although a statistically significant association was identified, its magnitude was small, possibly because the effect of label reading had not yet been translated into meaningful changes in daily consumption patterns.

### **Association Between Sugar-Sweetened Beverage Consumption and Adolescent Nutritional Status**

Spearman's correlation analysis demonstrated a significant association between packaged sugar-sweetened beverage consumption and nutritional status among adolescents at Public Junior High School 31, Tangerang City. The analysis yielded a p-value of 0.001 and a correlation coefficient of  $r = 0.601$ , indicating a strong positive association between the two variables. Thus, more frequent consumption of sugar-sweetened beverages was associated with a greater likelihood of excess nutritional status, including being overweight and obese.

This finding is consistent with Akhriani et al. (2016), who identified a significant association between sugar sweetened beverage consumption and being overweight among adolescents at Public Junior High School 1, Bandung. The present findings further support the evidence that sugar-sweetened beverages are an important risk factor for increased body weight among adolescents.

Although the overall frequency of sugar-sweetened beverage consumption was low, several products were consumed regularly. Teh Pucuk Harum was the most popular beverage, consumed two to three times per week by 30% of the participants and daily by 15%. Es Teh Solo was also frequently consumed, with 36.3% of participants reporting consumption two to three times per week and 15% reporting daily consumption. In contrast, beverages such as Tomoro Coffee and Kapal Api were rarely consumed, indicating that participants preferred tea-based beverages over coffee-based products.

Sugar-sweetened beverages, such as sweetened tea, soft drinks, and milk coffee, are generally high in sugar but low in essential nutrients. These beverages provide limited satiety; therefore, their repeated consumption may contribute to excess caloric intake. This pattern may promote weight gain and increase the likelihood of overweight status among adolescents (Akhriani et al., 2016).

Masri (2018) further explained that the consumption of high-calorie beverages is influenced not only by taste and availability, but also by social factors and daily habits. School and university students frequently consume sugar-sweetened beverages while studying, socializing, or engaging in other activities without considering their caloric intakes. Limited

nutritional awareness and environmental influences may reinforce sugar-sweetened beverage consumption among adolescents.

Although most participants did not excessively consume sugar-sweetened beverages, a significant association with nutritional status remained evident. This finding suggests that even when the consumption frequency is not high, regular intake may still be associated with the nutritional status of adolescents. Overall, consumption of sugar-sweetened beverages and awareness of nutrition labels may influence the nutritional status of adolescents.

This study has several limitations. First, its cross-sectional design precluded conclusions regarding the causal relationships among the variables. Second, questionnaire-based data collection is susceptible to potential biases, including recall bias and subjectivity in participants' responses. Third, the study was conducted at only one location, Public Junior High School 31, Tangerang City, which limits the generalizability of the findings to a broader population. Moreover, other factors that may influence nutritional status, including physical activity, overall dietary patterns, and environmental conditions were not examined in depth.

## Conclusion

The findings of this study indicate that mindful eating, nutrition labelreading, and sugar-sweetened beverage consumption are associated with the nutritional status of adolescents. Adolescents who pay greater attention to their dietary intake generally demonstrate better control over their eating patterns.

These findings underscore the contribution of behavioral factors, particularly awareness during eating and understanding nutritional information, to the nutritional status of adolescents during the school years, a critical period for establishing long-term dietary habits.

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## References

- Akhriani, M., Fadhilah, E., & Kurniasari, F. N. (2016). Hubungan konsumsi minuman berpemanis dengan kejadian kegemukan pada remaja di SMP Negeri 1 Bandung. *Indonesian Journal of Human Nutrition*, 3(1), 29–40. <https://doi.org/10.21776/ub.ijhn.2016.003.01.4>
- Andrianto, A. (2019). Faktor-faktor penyebab kenakalan remaja di Lebak Mulyo Kecamatan Kemuning Kota Palembang. *Tarbiyatuna: Kajian Pendidikan Islam*, 3(1), 59–71. <https://doi.org/10.29062/tarbiyatuna.v3i1.200>
- Anggraini, S., Handayani, D., & Kusumastuty, I. (2018). Tingkat pengetahuan cara membaca label informasi gizi mahasiswa status gizi normal lebih baik dibandingkan mahasiswa obesitas. *Indonesian Journal of Human Nutrition*, 5(2), 74–84. <https://doi.org/10.21776/ub.ijhn.2018.005.02.2>
- Artadini, G. M., Simanungkalit, S. F., & Wahyuningsih, U. (2022). Hubungan kebiasaan makan, paparan media sosial dan teman sebaya dengan status gizi mahasiswa Program Studi Gizi UPN Veteran Jakarta: The relationship between eating habits, social media exposure and peers with nutritional status of nutrition students at UPN Veteran Jakarta. *Jurnal Gizi dan Kesehatan*, 14(2), 317–329. <https://jurnalgizi.unw.ac.id/index.php/JGK/article/view/353>
- Badan Kebijakan Pembangunan Kesehatan. (2023). *Survei Kesehatan Indonesia (SKI) 2023 dalam angka*. Kementerian Kesehatan Republik Indonesia. <https://www.badankebijakan.kemkes.go.id/ski-2023-dalam-angka/>
- Badriyah, L., & Syafei, A. (2019). Persepsi dan perilaku membaca label pangan dan

- informasi gizi pada siswa SMK Wijaya Kusuma. *Jurnal Ilmu Kesehatan Masyarakat*, 8(4), 167–174. <https://doi.org/10.33221/jikm.v8i04.401>
- Barinda, M. F., Nurmalasari, Y., Mandala, Z., & Putri, D. F. (2024). Hubungan status gizi dan memori jangka pendek terhadap prestasi belajar pada remaja kelas VIII di SMPN 27 Bandar Lampung. *Jurnal Medika Malahayati*, 8(3), 678–689. <https://doi.org/10.33024/jmm.v8i3.14941>
- Chahyanto, B. A., Pandiangan, D., Aritonang, E. S., & Laruska, M. (2019). Pemberian informasi dasar Posyandu melalui kegiatan penyegaran kader dalam meningkatkan pengetahuan kader di Puskesmas Pelabuhan Sambas Kota Sibolga. *Action: Aceh Nutrition Journal*, 4(1), 7–14. <https://doi.org/10.30867/action.v4i1.119>
- Guendelman, S., Medeiros, S., & Rampes, H. (2017). Mindfulness and emotion regulation: Insights from neurobiological, psychological, and clinical studies. *Frontiers in Psychology*, 8, Article 220. <https://doi.org/10.3389/fpsyg.2017.00220>
- Hafiza, D., Utmi, A., & Niriyah, S. (2021). Hubungan kebiasaan makan dengan status gizi pada remaja SMP YLPI Pekanbaru. *Al-Asalmiya Nursing: Jurnal Ilmu Keperawatan (Journal of Nursing Sciences)*, 9(2), 86–96. <https://doi.org/10.35328/keperawatan.v9i2.671>
- Hendrickson, K. L., & Rasmussen, E. B. (2017). Mindful eating reduces impulsive food choice in adolescents and adults. *Health Psychology*, 36(3), 226–235. <https://doi.org/10.1037/hea0000440>
- Islamiati, L. P., & Sumarmi, S. (2023). The relationship between nutrition facts knowledge and nutrition facts reading habit among Al-Islam High School Krian students. *Media Gizi Kesmas*, 12(2), 833–839. <https://doi.org/10.20473/mgk.v12i2.2023.833-839>
- Kementerian Kesehatan Republik Indonesia. (2020). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 2 Tahun 2020 tentang standar antropometri anak*. <https://jdih.kemkes.go.id/documents/peraturan-menteri-kesehatan-nomor-2-tahun-2020>
- Maharani, T., & Khomsan, A. (2024). Hubungan mindful eating dan tingkat stres dengan status gizi pada siswa SMA Global Persada Mandiri School. *Jurnal Ilmu Gizi dan Dietetik*, 3(3), 199–208. <https://doi.org/10.25182/jigd.2024.3.3.199-208>
- Masri, E. (2018). Faktor determinan perilaku konsumsi minuman berkalori tinggi pada mahasiswa. *Scientia: Jurnal Farmasi dan Kesehatan*, 8(1), 53–63. <https://doi.org/10.36434/scientia.v8i1.155>
- Masri, E., Nasution, N. S., & Ahriyasna, R. (2022). Literasi gizi dan konsumsi gula, garam, lemak pada remaja di Kota Padang. *Jurnal Kesehatan*, 10(1), 23–30. <https://doi.org/10.25047/jkes.v10i1.284>
- Mustakim, M., Sabilla, M., Efendi, R., & Aprillia, T. (2024). Hubungan mindful eating (ME) dan healthy eating literacy (HEL) dengan status indeks massa tubuh (IMT) pada remaja di Kota Tangerang Selatan. *Jurnal Ilmu Kesehatan Masyarakat*, 13(1), 66–71. <https://doi.org/10.33221/jikm.v13i01.2456>
- Nafisah, N., Masrikhiyah, R., & Setyaningsih, S. (2023). Hubungan tingkat pengetahuan, persepsi dan kepatuhan membaca label pangan makanan kemasan terhadap status gizi mahasiswa Fakultas Ilmu Kesehatan. *Jurnal Ilmiah Gizi Kesehatan (JIGK)*, 5(1), 15–21. <https://doi.org/10.46772/jigk.v5i1.1261>
- Nurjayanti, E., Rahayu, N. S., & Fitriani, A. (2020). Nutritional knowledge, sleep duration, and screen time are related to consumption of sugar-sweetened beverage on students of Junior High School 11 Jakarta. *ARGIPA (Arsip Gizi dan Pangan)*, 5(1), 34–43. <https://doi.org/10.22236/argipa.v5i1.3878>
- Pratama, C. I. A. S., & Mardiyati, N. L. (2024). Hubungan antara kebiasaan membaca label kandungan gizi minuman kemasan berpemanis dengan status gizi pada pelajar SMP Al Islam 1 Surakarta. *Ghidza: Jurnal Gizi dan Kesehatan*, 8(1), 127–134. <https://doi.org/10.22487/ghidza.v8i1.1340>
- Sari, S. L., Utari, D. M., & Sudiarti, T. (2021). Konsumsi minuman berpemanis kemasan pada remaja. *Ilmu Gizi Indonesia*, 5(1), 91–100. <https://doi.org/10.35842/ilgi.v5i1.253>

- Sirajuddin, Surmita, & Astuti, T. (2018). *Survey konsumsi pangan*. Pusat Pendidikan Sumber Daya Manusia Kesehatan.
- Suryana, E., Hasdikurniati, A. I., Harmayanti, A. A., & Harto, K. (2022). Perkembangan remaja awal, menengah dan implikasinya terhadap pendidikan. *Jurnal Ilmiah Mandala Education*, 8(3), 1917–1928. <https://doi.org/10.58258/jime.v8i3.3494>
- Widnatusifah, E., Battung, S., Bahar, B., Jafar, N., & Amalia, M. (2020). Gambaran asupan zat gizi dan status gizi remaja pengungsian Petobo Kota Palu. *Jurnal Gizi Masyarakat Indonesia: The Journal of Indonesian Community Nutrition*, 9(1), 17–29. <https://doi.org/10.30597/jgmi.v9i1.10155>
- Yulianti, R. D., & Mardiyah, S. (2024). Faktor-faktor yang berhubungan dengan konsumsi minuman kemasan berpemanis pada remaja. *Jurnal Sains Kesehatan*, 30(3), 90–99. <https://doi.org/10.37638/jsk.30.3.90-99>
- Zantika, T., & Kurnia, P. (2023). Hubungan pengetahuan informasi nilai gizi dengan perilaku membaca label informasi nilai gizi pada mahasiswa. *Pontianak Nutrition Journal (PNJ)*, 6(1), 340–345. <https://doi.org/10.30602/pnj.v6i1.1155>