



The Relationship Between Breakfast Habits and Learning Concentration in Students at SMP Negeri 8 Manado

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Abstract. Breakfast is an essential meal that provides energy to support daily activities and cognitive functions, particularly learning concentration among school-aged children. Adequate breakfast consumption contributes to improved nutritional status, which is closely aligned with Sustainable Development Goal (SDG) 2, aimed at ending hunger and improving nutrition. Furthermore, optimal nutrition supports cognitive development and learning capacity, which are fundamental to achieving SDG 4, ensuring inclusive and equitable quality education. In Indonesia, a substantial proportion of students skip breakfast, a behavior that may negatively affect their ability to concentrate, think clearly, and maintain physical endurance during school activities. This study aimed to examine the relationship between breakfast habits and learning concentration among students at SMP Negeri 8 Manado. The study employed a quantitative analytic survey design with a cross-sectional approach. A total of 85 students were selected using proportional random sampling. Data were collected through structured questionnaires to assess breakfast habits and concentration test sheets to measure learning concentration. Statistical analysis was conducted using the Spearman Rank correlation test. The findings revealed that more than half of the students had good breakfast habits (52.9%), while only 29.4% demonstrated good learning concentration. Statistical analysis showed a significant relationship between breakfast habits and learning concentration ($p = 0.007 < 0.05$), with a moderate strength of correlation ($r = 0.292$). The study concludes that there is a positive and significant relationship between breakfast habits and learning concentration among students at SMP Negeri 8 Manado. Regular and adequate breakfast consumption plays an important role in supporting students' concentration during learning activities, highlighting its contribution to nutritional well-being and educational quality in line with the SDGs.

Keywords: Breakfast Habits; Cross-Sectional Study; Junior High School Students; Learning Concentration; School-Aged Children

1. Introduction

Breakfast is widely acknowledged as a critical component of daily nutrition, providing essential energy and nutrients required to support cognitive function, physical activity, and overall health. After an overnight fasting period, the body relies on breakfast to restore glucose levels and optimize brain performance, particularly among school-aged children whose cognitive demands are high during morning learning sessions. Adequate breakfast consumption contributes to improved nutritional status, which is closely aligned with Sustainable Development Goal (SDG) 2, aimed at ending hunger and improving nutrition. Furthermore, optimal nutrition supports cognitive development and learning capacity, which are fundamental to achieving SDG 4, ensuring inclusive and equitable quality education. In Indonesia, a substantial proportion of students skip breakfast, a behavior that may negatively

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affect their ability to concentrate, think clearly, and maintain physical endurance during school activities. Despite its recognized importance, breakfast skipping remains prevalent in many developing countries, including Indonesia, and poses a growing public health concern.

A nutritionally adequate breakfast typically includes carbohydrates, protein, fruits or vegetables, and sufficient fluid intake to ensure dietary balance. Regular breakfast consumption has been associated not only with improved nutritional status but also with healthier eating behaviors throughout the day, reduced intake of energy-dense snacks, and lower risk of non-communicable diseases. Conversely, skipping breakfast has been linked to fatigue, reduced alertness, impaired cognitive processing, and decreased participation in physical activities among children and adolescents (Kementerian Kesehatan, 2014).

Learning concentration is a fundamental determinant of academic performance. Concentration refers to the ability to sustain attention and selectively focus on relevant stimuli while ignoring distractions. Previous research has demonstrated that students with adequate nutritional intake exhibit better concentration, memory, and learning engagement compared to those with poor dietary habits. Nutrition is considered a modifiable factor influencing concentration, and breakfast represents a key entry point for meeting daily nutritional requirements (Sari, 2023).

National data indicate that breakfast skipping is highly prevalent across different age groups in Indonesia, affecting approximately 16.9% of school-aged children, 50% of adolescents, and 31.2% of adults (Doloksaribu, 2024). Similar findings have been reported in earlier studies, which identified time constraints, lack of appetite, and gastrointestinal discomfort as common reasons for skipping breakfast among children (Purba, 2018). These patterns suggest a potential risk for suboptimal cognitive functioning during school hours.

Empirical evidence has increasingly highlighted the association between breakfast habits and learning concentration. A UNICEF survey reported that 73% of students experienced difficulties maintaining concentration during learning activities (Nurmalasari, 2022). Studies conducted in various junior high schools in Indonesia have demonstrated that students who regularly consume breakfast tend to show significantly better concentration levels than those who skip breakfast (Virginia, 2024; Doloksaribu, 2024). However, the strength and consistency of this association vary across settings, and evidence from schools in eastern Indonesia, particularly Manado, remains limited.

Preliminary observations at SMP Negeri 8 Manado revealed that a number of students exhibited low concentration during classroom activities, characterized by drowsiness, inattentiveness, and difficulty focusing on instructional material. These behaviors were frequently associated with habitual breakfast skipping. Such conditions may hinder students' academic achievement and long-term learning outcomes if not addressed.

Therefore, this study aims to examine the relationship between breakfast habits and learning concentration among students at SMP Negeri 8 Manado. By providing context-specific evidence, this research seeks to strengthen the existing body of knowledge and support school-based nutritional interventions. The findings are expected to confirm that regular breakfast consumption is positively associated with improved learning concentration, underscoring the importance of promoting healthy breakfast habits as part of comprehensive strategies to enhance students' academic performance.

2. Methods

This study employed a quantitative analytic survey design using a cross-sectional approach. The cross-sectional design was selected to examine the relationship between breakfast habits and learning concentration among junior high school students at a single point in time. This design allows for efficient assessment of associations between variables within a defined population.

The study was conducted at SMP Negeri 8 Manado, Indonesia, a public junior high school. Data collection was carried out over a four-month period, from July to October 2025. The study population consisted of all students enrolled at SMP Negeri 8 Manado during the study period, totaling 769 students.

The minimum required sample size was calculated using the Lemeshow formula for cross-sectional studies to ensure adequate statistical power. Based on this calculation, a total of 85 students were determined to be sufficient and were included as research participants.

A proportional random sampling technique was used to ensure representativeness across class levels. The number of participants selected from each class was determined proportionally according to the total number of students per class. Subsequently, individual participants were selected randomly using the RANDBETWEEN function in Microsoft Excel. Only students who met the predefined inclusion and exclusion criteria were eligible for participation (Machali, 2021).

The dependent variable in this study was learning concentration, while the independent variable was breakfast habits. Breakfast habits were assessed using a structured self-administered questionnaire developed based on national dietary guidelines and relevant literature. The questionnaire captured information on breakfast frequency, timing, and regularity. Learning concentration was measured using a standardized concentration test sheet appropriate for junior high school students. Both instruments were administered during school hours under the supervision of the research team.

Data were entered and analyzed using statistical software. Descriptive statistics were used to summarize participant characteristics, breakfast habits, and concentration levels. The relationship between breakfast habits and learning concentration was analyzed using the Spearman Rank correlation test, as the data were not normally distributed. Statistical significance was set at $p < 0.05$.

3. Results and Discussion

3.1. Univariate Analysis

3.1.1. Breakfast Habits

Table 1 presents the frequency distribution of breakfast habits among students at SMP Negeri 8 Manado.

Table 1. Frequency Distribution of Breakfast Habits

Breakfast Habits	n	(%)
Good	45	52.9
Moderate	39	45.9
Poor	1	1.2
Total	85	100

The results show that more than half of the students had good breakfast habits, accounting for 45 respondents (52.9%). Meanwhile, 39 students (45.9%) were classified as having moderate breakfast habits. Only one student (1.2%) was categorized as having poor breakfast habits. Overall, these findings indicate that the majority of students had relatively adequate breakfast habits, although a substantial proportion still demonstrated moderate breakfast patterns, which may have implications for their learning concentration.

3.1.2. Learning Concentration

Table 2 shows the frequency distribution of learning concentration among students at SMP Negeri 8 Manado.

Table 2. Frequency Distribution of Learning Concentration

Learning Concentration	n	(%)
Very Good	25	29.4
Good	25	29.4
Moderate	23	27.1
Poor	11	12.9
Very Poor	1	1.2
Total	85	100

The results indicate that 25 students (29.4%) demonstrated very good learning concentration, while an equal proportion of students (29.4%) were categorized as having good learning concentration. Meanwhile, 23 students (27.1%) exhibited a moderate level of learning concentration. A smaller proportion of students had poor learning concentration (12.9%), and only one student (1.2%) was classified as having very poor learning concentration. Overall, these findings suggest that although a considerable proportion of students demonstrated good to very good learning concentration, a notable percentage still experienced moderate to poor concentration levels, which may affect their learning performance.

3.2. Bivariate Analysis

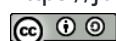
3.2.1. Association Between Breakfast Habits and Learning Concentration

Table 3 presents the cross-tabulation between breakfast habits and learning concentration among students at SMP Negeri 8 Manado.

Table 3. Cross-tabulation of Breakfast Habits and Learning Concentration

Breakfast Habits	Very Good	Good	Moderate	Poor	Very Poor	Total
Good	18	12	13	2	0	45
Moderate	7	13	10	8	1	39
Poor	0	0	0	1	0	1
Total	25	25	23	11	1	85

The table illustrates the distribution of learning concentration levels across different categories of breakfast habits, providing an initial overview of the association between the



two variables prior to statistical testing. The results show that students with good breakfast habits were more likely to demonstrate very good and good learning concentration, with 18 students categorized as having very good concentration and 12 students showing good concentration. In contrast, students with moderate breakfast habits were more widely distributed across concentration levels, including higher proportions in the moderate and poor concentration categories. Only one student was classified as having poor breakfast habits, and this student demonstrated poor learning concentration. Overall, the table suggests a trend in which better breakfast habits are associated with higher levels of learning concentration. This descriptive finding supports the subsequent correlation analysis, which statistically confirms the relationship between breakfast habits and learning concentration.

3.2.2. Spearman Rank Correlation Analysis

Table 4 presents the results of the Spearman Rank correlation analysis between breakfast habits and learning concentration among students at SMP Negeri 8 Manado.

Table 4. Spearman Rank Correlation Between Breakfast Habits and Learning Concentration

Variable	Breakfast Habits	Learning Concentration
Breakfast Habits	1.000	0.292
Learning Concentration	0.292	1.000
Sig. (2-tailed)	0.007	0.007

The analysis revealed a statistically significant positive correlation between breakfast habits and learning concentration ($r = 0.292$, $p = 0.007$). This indicates that better breakfast habits are associated with higher levels of learning concentration. The strength of the correlation was classified as moderate, suggesting that although breakfast habits are not the sole determinant of learning concentration, they play a meaningful role in supporting students' cognitive focus during learning activities.

3.3. Discussion

3.3.1. Breakfast Habits Among Students at SMP Negeri 8 Manado

Previous studies have demonstrated that students' energy levels and concentration improve after consuming a satisfying breakfast, which in turn contributes to better academic performance. Adequate breakfast consumption has also been shown to help adolescents and adults prevent overweight and obesity. In addition to reducing excessive snacking and overeating at lunchtime, developing regular breakfast habits is closely linked to healthy daily routines, such as waking up early and engaging in morning physical activity (Kemenkes, 2014). Breakfast plays a protective role in maintaining overall health and preventing excessive consumption of unhealthy snacks (Suraya, 2019).

Adolescence represents a critical developmental period characterized by rapid physical, cognitive, and psychosocial changes. During this stage, adolescents require adequate and nutritious food to support growth, high energy demands, and daily physical activities. Regular breakfast consumption is an effective strategy to improve overall nutrient intake among adolescents (Annisa, 2024).

3.3.2. Learning Concentration Among Students at SMP Negeri 8 Manado

Learning concentration is a key indicator of successful behavioral change during the educational process, reflecting students' ability to apply knowledge, skills, attitudes, and values effectively. The ability to sustain attention is therefore widely recognized as a critical determinant of academic success (Riinawati, 2021).

The results of this study indicate that a considerable proportion of students demonstrated favorable levels of learning concentration. Previous studies have demonstrated a strong association between concentration and learning outcomes, emphasizing that insufficient focus can disrupt comprehension, memory retention, and academic performance (Fatchuroji, 2023).

Students who attend school without breakfast often experience discomfort, weakness, dizziness, or lethargy, which diverts attention away from instructional content toward physiological discomfort (Barokah, 2022). Supporting this, Khailanisa (2023) reported that 63.7% of students with regular breakfast habits demonstrated good concentration, underscoring the role of breakfast in supplying energy to the brain and enhancing attentional capacity during learning activities.

3.3.3. Association Between Breakfast Habits and Learning Concentration

Students who consume breakfast with adequate intake of carbohydrates, protein, fiber, vitamins, and minerals are more likely to remain alert, responsive, and actively engaged in classroom activities. In contrast, skipping breakfast is associated with reduced energy levels, increased fatigue, drowsiness, and difficulty focusing on instructional material, which may ultimately impair academic achievement (Aminasya, 2024). Pebriani (2022) reported a significant relationship between breakfast habits and learning concentration among elementary school students. Herayeni (2024) also reported a significant and moderately strong correlation, highlighting that students who consumed substantial breakfast meals rather than beverages alone demonstrated better concentration levels.

Additional evidence from Rosalina (2022) showed a significant association between breakfast habits and classroom focus among elementary school students, with breakfast skipping linked to cognitive difficulties such as impaired short-term memory, reduced problem-solving ability, and physical symptoms including hunger, weakness, dizziness, and sleepiness. Similarly, Verdiana et al, (2017) found that students who regularly consumed balanced breakfasts were more likely to exhibit high or very high academic focus compared to those who skipped breakfast. Zainul (2021) further confirmed this relationship, emphasizing importance of increasing awareness among students and parents regarding the cognitive benefits of breakfast.

Conclusions

This study concludes that the majority of students at SMP Negeri 8 Manado demonstrated good breakfast habits. In addition, most participants exhibited very good levels of learning concentration. Importantly, the findings reveal a statistically significant and positive relationship between breakfast habits and learning concentration among students. These results indicate that better breakfast habits are associated with higher levels of learning concentration. Regular and nutritionally adequate breakfast consumption therefore plays an important role in supporting students' cognitive readiness and concentration during learning activities.

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Conflicts of Interest

The authors declare no conflict of interest.

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