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The Relationship Between Breakfast and the Learning Concentration of Students

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Breakfast is the first meal consumed in the morning before starting activities, usually before 10 a.m. Breakfast plays an important role because it provides 20-35% of the calories the body needs to carry out daily activities. In addition to providing energy, breakfast can also improve concentration, memory, and information processing speed. The glucose obtained from breakfast supports nervous system activity, mood, and cognitive function. Cognitive function is fundamental in the process of learning, thinking, and decision-making, and is strongly influenced by breakfast intake. Physiologically, the brain needs glucose as its primary source of energy, and breakfast helps restore the energy supply after an overnight fast. This study used a quantitative approach with correlational and cross-sectional designs, involving 40 grade VIII students with total sampling. The instruments used were questionnaires, digit symbol tests (DST), and observations. The results of the analysis with the Spearman rho test showed a positive relationship between breakfast and study concentration, with a value of r = 0.521 and a p-value of 0.001. This research is expected to contribute to education and health policies, including education on the importance of breakfast to improve the quality of education in Indonesia.

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Introduction

Breakfast has a crucial role in providing the source of energy that the brain needs to function optimally in the morning. Children who do not eat breakfast tend to experience a decrease in brain energy, which can impact their ability to concentrate during the learning process at school. The habit of skipping breakfast is still high among students. Global studies show that 10-30% of children and adolescents do not eat breakfast regularly. The prevalence of skipping breakfast in 33 countries reported that 10-30% of children and adolescents did not eat breakfast. The latest results from a Norwegian national survey conducted in 2022 reported that 23% of teenagers in middle and high school usually skip breakfast (Hovdenak et al., 2024).

Based on a study at an international school in Colombo, Sri Lanka reported that 48% of school children (10 – 15 years old) often miss breakfast due to various factors such as not enough time and no one providing breakfast (Veliwita, 2024). In Indonesia, according to data Riskesdas (2018) revealed that as many as 26% of children are known to only consume drinks at breakfast time, while 47% of children aged 6 to 12 years have not reached the minimum energy intake recommended in their breakfast menu. In developed countries, breakfast is usually considered part of a healthy lifestyle and is supported by institutional policies such as in the United States, namely *school breakfast programs*. Access to nutritious food is more even, and children's diets tend to be more structured. On the other hand, in Indonesia, breakfast culture is influenced by economic factors, parental education, and time constraints. Breakfast is often skipped or consists of low-nutrient foods, which can potentially affect a child's ability to concentrate at school.

A low-quality breakfast has an impact on cognitive function. Children who do not eat breakfast or consume low-nutrient foods tend to experience decreased concentration, memory, and immunity (Salsabila & Nareswari., 2023). Skipping breakfast will cause hypoglycemia, as well as decreased brain function and even cause stress, which leads to reduced learning ability and poor memory. Refrain from eating throughout the night and then skipping breakfast can deprive the nervous system of essential nutrients, which can decrease productivity and visual attention (Abdullah et al., 2024) .

According to Wote et al., (2023) there is a very close relationship between breakfast and study concentration. If breakfast is always done, the student's learning concentration will increase, and vice versa, if breakfast is not done, the student's learning concentration will

decrease, this will have problems with learning achievement. A similar opinion was put forward by (Purnawinadi & Lotulung, 2020) that increased learning concentration has a relationship with breakfast which is able to have positive effects such as increasing brain activity and making study concentration more focused. One of the factors that helps students achieve better achievement is concentration, if the concentration of learning is reduced, it will be difficult to follow the lessons in class. Skipping breakfast can cause the body to lack glucose, which is the main source of energy for daily activities. This can negatively affect the entire body including the brain.

Concentration has a significant impact on the learning process. The ability to concentrate plays an important role for children in remembering. processing materials, and developing subject matter obtained at school (Ilahi et al., 2022). However, some factors affect concentration, such as the habit of eating breakfast is often overlooked in education policies and interventions in the school environment.

In Indonesia, there are still many school-age children who experience micro and macro malnutrition. This condition has a direct impact on the ability to concentrate, academic achievement, and long-term health. Therefore, this study is important because it not only focuses on the relationship between breakfast and study concentration, but also conducts direct measurements of concentration levels using *the Digit Symbol Test*, not just a questionnaire. The results of this research are expected to contribute to the implementation of education and health policies, such as the evaluation of the Free Nutritious Meal program, the establishment of the UKS program, and education to parents and students about the importance of breakfast as an effort to improve the quality of education and human resources in Indonesia.

A nutritious breakfast includes adequate amounts of carbohydrates, building blocks, vitamins and minerals, and plays an important role in supporting increased blood sugar levels. Consistently consuming breakfast with good quality can have a positive impact on a child's cognitive abilities, including memory, concentration levels and other thinking skills (Jorquera et al., 2021). Breakfast habits are still a problem for school children, some of the factors that affect children rarely eat breakfast are lack of time, lack of appetite or diet to lose weight usually occurs among girls, and children from low socioeconomic backgrounds (Moller et al., 2022).

Method

The study applied a quantitative approach with correlational and *cross-sectional designs.* The population in this study was 40 students of VIII. The respondent selection method applied in this study is *total sampling*, where grade VIII students are used as the respondents involved. The breakfast data collection technique uses questionnaires, *digit symbol tests* to assess concentration, and observation sheets to observe student behavior during the learning process. The analysis technique used is univariate analysis to describe the characteristics of variables. Bivariate analysis using *the rho spearman* test was conducted to test the relationship between breakfast and study concentration. This research was conducted in July 2025.

Research Results

Table 1 Characteristics of respondents based on gender dan Age

No	Gender	Frequency (F)	Percentage (%)
1	Man	19	47,5 %
2	Woman	21	52,5 %
	Total	40	100 %

No	Age	Frequency (F)	Percentage (%)
1	14 years	27	67,5 %
2	15 years	13	32,5 %
	Total	40	100 %

Based on table 1, the total number of participants in this study is 40 students. The majority of respondents were female students, namely 21 people, while male students totaled 19 people. Based on the age distribution, most of the respondents were 14 years old as many as 27 students, while the rest with the age of 15 years were 13 students.

Table 2 Analysis of research variables

No	Breakfast	Frequency (F)	Percentage (%)
1	Ya	16	40,0 %
2	No	24	60,0 %
	Total	40	100 %

No	Score DST	Frequency (F)	Percentage (%)
1	Good	14	35,0%
2	Less	26	65,0%

Total	40	100 %

Based on table 2, it shows that most respondents do not eat breakfast before starting learning activities at school, namely 24 people (60.0%) and 16 people (40.0%) eat breakfast. The majority of students do not consume morning meals before starting school activities. The level of students' learning concentration ability was identified through the *Digit Symbol Test instrument*. The category of student learning concentration is divided into two, namely good (score > 60) and low (score <60) in table 5.5 showing that the category of concentration measurement using *the digit symbol test* score in the most female students in this study is lacking, namely 26 people (65.5%) and the good category as many as 14 people (35.5%).

Table 3 Relationship between breakfast and *symbol test score digits*

Variable X	**Variabel Y**	**Correlation Value (r)**	**Sig.**
Breakfast	*Digit symbol test score*	0,521	<0.001

Based on the test, breakfast is statistically correlated with learning constraint as measured using *the Digit symbol test.* The resulting correlation test was r = 0.521. The data obtained showed a statistically tested relationship between breakfast and learning concentration in a positive direction, which means that if students eat breakfast before going to school, they can concentrate well in class. On the other hand, the absence of breakfast intake before leaving for school can have an impact on students' ability to concentrate.

Discussion

This study aims to identify the relationship between breakfast and the level of learning concentration of Madrasah Tsanawiyah students. Based on data obtained from 40 respondents, it was found that the majority of students (60%) did not eat breakfast before going to school. These findings suggest that breakfast has not become a consistent routine among students. The results of this study are in line with research by Virginia & Sudyasih (2024) who stated that as many as 16.9% - 50% of school-age children and adolescents are not used to eating breakfast, as well as research conducted by Sliwa et al. (2024), which stated that most school-age children and adolescents tend to skip breakfast.

The characteristics of respondents in this study showed that the majority of respondents were female (52.5%) and 14-year-old (67.5%). This study found that girls skip breakfast more

often, in line with the study of Arista et al. (2021) schoolchildren tend to follow their friends, choosing to skip breakfast or adjust their diet to their friends' habits, such as snacking outside or going to school without eating first. While research conducted by Balanco et al. (2025) girls are generally more likely to skip breakfast and this pattern often appears even before adolescence, it links these behaviors to psychosocial factors such as body image and dietary tendencies. Concentration measurement using *the digit symbol test* showed that 65.5% of students had a low concentration level, while only 35.5% were in the good category. The results of observations during learning also show that students' attention is easily distracted by small stimuli in the classroom environment.

Based on the results of statistical analysis, the Spearman rho test yielded a value of r = 0.521, which showed a positive correlation between breakfast and concentration. This finding is strengthened by the study The findings of this study are also supported by the research conducted Liu et al., (2021) Regular breakfast with good nutritional quality contributes meaningfully to the growth of cognitive abilities. Children who are regularly and adequately nourished at breakfast show increased verbal and total IQ, as well as attention memory abilities, and verbal processing. The results of the study conducted by Kawabata et al., (2021) Proving that the combination of breakfast and exercise has been shown to have a significant positive effect on children's cognitive function and academic performance. Breakfast provides glucose as the main fuel for the brain, while exercise increases blood flow to the brain, both supporting children's ability to complete academic tasks more quickly and appropriately.

Study Martin et al., (2024) Of the 648 students, it was shown that the breakfast routine and quality not only provided energy, but also supported learning motivation, concentration, and academic achievement. The presentation of the results of this study provides an overview that breakfast has been proven to play an important role in supporting cognitive function and learning concentration, both of which in addition to nutritional aspects, there are also other factors that contribute to this condition. Breakfast habits are influenced not only by individual factors, but also environmental factors such as time, parental role and level of knowledge. The results of this study emphasize the importance of parental involvement in ensuring that children eat breakfast regularly and with adequate nutritional content. Parents need to be given the

understanding that breakfast habits are not just a meal routine, but an important part of children's learning readiness.

This study has a number of limitations that need to be noted. First, the sample size used is relatively small, consisting of only 40 students, in one school. Second, the time for the research to be carried out in a relatively short span of time. Thus, it does not include other important aspects that contribute to cognitive function and learning concentration. Therefore, further studies with longitudinal design and multivariate approaches are needed that can further examine other factors that affect learning concentration, such as sleep quality, physical activity, and students' psychological state.

Conclusion

This study provides a relationship between breakfast and study concentration. This study provides a statistical picture that the better the breakfast, the higher the level of study concentration shown by the students. The measurement uses *a digit symbol test* that the majority of students have a low level of concentration during learning, where most students skip breakfast before leaving for school. Breakfast consumption is not only influenced by the quantity of breakfast consumed, but also the quality of breakfast consumed. In addition, the routine of consuming breakfast is also important in the morning for students to be ready to use the cognitive function and concentrate on the learning process. The role of parents in preparing breakfast for students has an important meaning in shaping the younger generation who are ready to face academic challenges at school. School support is needed to remind and motivate parents to prepare a nutritious breakfast for students before leaving for school. Parents play an important role in preparing breakfast which is very crucial to support children's concentration in school. Breakfast is not just a morning routine, but the cognitive and emotional foundation of the child throughout the day.

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